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NEW COMPUTER EXPRESS

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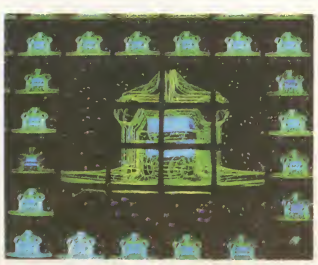
MAY 6th 1999

WHAT WILL YOU BE DOING?



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Amstrad's peculiar PC 2286 investigated

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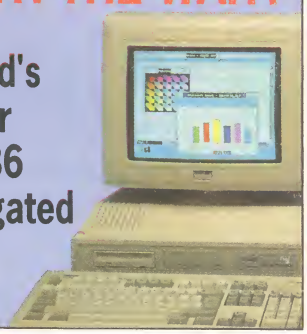

Start a bulletin board for £40

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PC • C64 • Amiga • Atari ST • Spectrum • CPC • PCW • QL • BBC • MSX SECTIONS FOR YOUR MACHINE

BULLETIN BOARDS TO MUG NICHOLSON HACKING BILL

● Nicholson: Under fire

Furious bulletin board owners throughout the country have joined forces to present a united front against the forthcoming anti-hacking Bill.

Some 350 boards are teaming up to form a new organisation called the Modem User Group (MUG). The body will call on Tory MP Emma Nicholson to demand why she seeks to take drastic measures against hackers (*Express* 25) and how her plans will affect bulletin boards.

All are worried that the bill may affect their boards – some of which have been established for ten years. MUG reckons it will be representing around 5,000 home modem users who regularly log on.

They are concerned that Nicholson plans to "come down heavily" on small bulletin boards in an effort to flush out hackers. This has been denied by Nicholson who says she has no intention of making computing more expensive for honest owners.

Even so, a nationwide network of bulletin boards was buzzing last week as organisers attempted to rally up support. Once fully operational they plan to make their angst public through the national press. MUG is also hoping to raise some support from modem manufacturers.

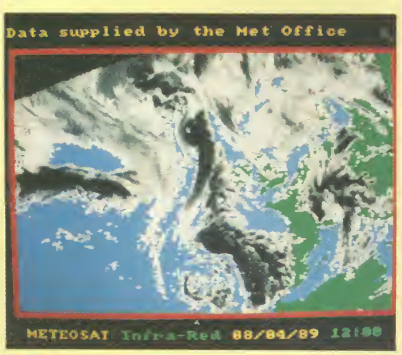
Organiser Noel Bradford of the Embassy Bulletin Board told *Express*: "The bulletin board fraternity is really getting organised. I've never known anything like it. Everyone wants to talk to us."

"We can't just sit back and let it all happen. We want to meet Emma Nicholson and find out what she's up to. I'm not sure how far she wants to go."

Although many of the members are "one man in his bedroom" affairs MUG hopes there will be strength in numbers. Whilst many have some sympathy with the notion of cracking down on dangerous hackers they want to distance themselves from the Bill.

If it fails MUG will have to wait until the Queen's Speech in the autumn to hear what is being proposed. And that will only be if Nicholson's Private Members Bill is taken on by the Government.

Amiga Weathers the storm



● Forecast: Tapping into the Met

Amiga owners can now receive weather satellite pictures beamed down from space with the new Teletext Adaptor from MicroText.

The pictures originate from satellites with built in cameras orbiting around the world above the equator. The Met office's super computers receive and process the pictures so they look as if they were taken from above Britain.

Although the pictures are transmitted via Ceefax they cannot be received without a computer adaptor and relevant software. The £125 adaptor can enable users to tap into the regularly updated pictures. Downloading is free. More from Microtext on 0705 595694.

Ocean Hit Squad: Collect the set

Ocean's long awaited line up of budget games are to be released three at a time, every month, with the firm hoping that gamesters will try and make up a complete set.

Every month a £2.99 game based on a film or TV licence, a coin-op conversion and a sports game will be released. It is understood that the first three out on the Hit Squad label will be *Rambo*, *Enduro Racer* and *Daley Thompson*.

No date has been agreed yet as to when to unleash its hits although it is thought the scheme will begin before September.

The idea is to make sure no two similar games are launched together. Ocean is pondering offering tokens with the games. When gamers have collected enough they will be offered a cheap rack to store the titles.

One insider told *Express*: "We think it would be a good idea for people to collect the games. That done though they'll want something to put them in. It will be a complete collection of a variety of hits." All the details are yet to be finalised. As such Ocean is preferring not to comment on the matter.

'GIVE US YOUR OLD SOFTWARE AND SAVE THE STARVING'

International charity organisation Oxfam is to launch another appeal aimed at home computer users with the hope of raising money for the starving and needy.

The body wants users to bring their old software into local Oxfam stores. They will then be sent down to London to be sold through special centres. Oxfam's sale of all the software will take place throughout June and July.

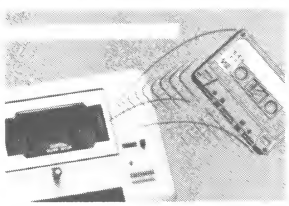
"By donating your old software to our shops we can resell them and raise substantial amounts of money to help people suffering from hunger, disease, homelessness and extreme poverty around the world," explained Oxfam's Richard English.

"We're particularly interested in games and home computing software that people no longer need for whichever type of machine."

In the past Oxfam has ventured into home computing with charitable appeals. Gamers have always proved themselves to be a generous lot raising money for the starving, drug addicts and Save the Children in the past through auctions at shows and compilations.

Oxfam is constantly working on emergency relief and long term projects in Africa, Asia, Latin America and the Middle East. The body wouldn't say how much it hopes to raise although it urged gamers to bring their old goodies into one of the 900 shops around the country.

OXFAM



HEAD CASES

Alleged faulty problems with the Commodore C64's datacorder have prompted Palan to launch an adjustable loader of its own. Palan says the main problem with loading is variable head alignment. Because people are having difficulty loading games they think the machine is faulty.

Load-It features a small knob which will align the head properly using a flashing LED. It costs £40.

As easy as ABC

An ultra low cost clone of mega selling spreadsheet *Lotus 1-2-3* has been launched by Trius Software.

Costing only £35 *As-Easy-As* is claimed to be a doddle for anyone who is familiar with *1-2-3*. Worksheets can be set up stretching 248 rows by 256 columns. It can also be configured to handle 3D worksheets.

All the necessary mathematical gadgetry has been bunged in. *Lotus 1-2-3* itself weighs in at a hefty £395.

***As-Easy-As* can be obtained from Shareware Marketing on 0297 24088.**

Radio days

Liverpudlian actress and Letter to Brezhnev star Alexandra Pigg is to give people advice on how to access personal computer data in a series of radio ads.

The former Brooksider will be telling listeners how to make use of the Data Protection Act in order to find out what info the authorities have stashed away.

SIR CLIVE: My high tech vision

High-tech boffin Sir Clive Sinclair has taken a short break from inventing and manufacturing computers to make dramatic science fiction predictions about Britain tomorrow.

He has turned his attentions to the dreadful traffic problem clogging up our roads. His solution is to build a network of computerised motorways which would eradicate the need to drive. In a report entitled Traffic in the City, Sinclair predicted that motorists would simply drive onto the motorway and go into full auto pilot. Drivers could sit back as their cars whizz along at 100mph – keeping a standard but short distance from other vehicles. Sir Clive admitted that it would be "very costly" but he poited out the need for tar reaching changes. Previous achievements include the Spectrum micro , Z88 and, of course, the doomed Sinclair C5 electric tricycle.

• Sir Clive: Computerise our roads

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NEW COMPUTER EXPRESS

COMMENT

CHARITY BEGINS WITH HOME COMPUTERS

Oxfam's scheme to recycle some of our investments in home computing into the Third World is not the first charity scheme involving home computer users.

In 1985, SoftAid – the first ever games compilation – raised a third of a million pounds for Famine Relief. In 1986, the anti-drugs campaign Off the Hook got £70 000 from another compilation. The NSPCC received approaching £50 000 the next year, and the current Industry charity, the National Autistic Society, will benefit from a similar venture some time this year.

In addition, various industry figures regularly organise one-off charity events, the sort done by schools, clubs and societies up and down the country.

Home computing is still shaking off its trivial image of games machines and shoot-em-ups; but as using a computer becomes more and more legitimate a leisure pursuit, it is nice to know that micro owners are also contributing to good causes, and that the industry is gaining an ever more responsible and worthy image.

BUT STILL A BARGAIN

Having got you into a mood to give more money, a note about our new cover price. With inflation at 8%, paper and production costs are rising all the time, and we're having to up the price of Express from next week. At 58p it still represents the best computer magazine bargain around, and to compensate for the rise we'll be packing it with even more news, reviews and features.

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PUBLISHER.....Greg Ingham
© Future Publishing Ltd 4 QUEEN ST, BATH, BA1 1EJ
TEL: 0225 446034 • FAX: 0225 446019
Printed by Redwood Web Offset, Trowbridge, Wilts
Distributed by Comag, West Drayton, Middx

BITS AND BITES

A new software house called Screen 7 has been launched by Software communications, with a line up of games promised for June.

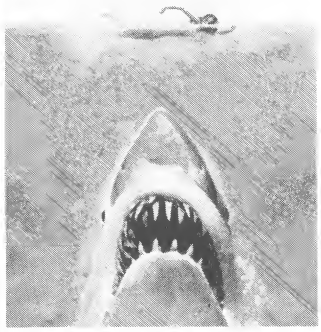
First up will be a licence of blockbusting 70's shark movie *Jaws* on all major formats. All the firm's games will be programmed by Irish team Emerald and Portsmouth based Intelligent Design – both part of Software Communications.

Last month Communications closed down its seven year old label Martech (*Express* 24) with promises of a new label in the near future.

Boss David Martin has handed over the boring job of distributing and selling games to Pontefract based A1. He wants to spend more time on the creative side.

"The actual development of games is where our strengths lie. Nowadays, if you want to release a top quality game you have to spend a lot of time with it. You can only do so much. We are going to be really paying attention to detail," said Martin.

On why he has replaced Martech with a new label he said: Martech was launched in 1982 and it did a lot of good things and a few not so good things. We've learnt a lot from that and you will see it in the new



• JAWS: Software Communications bites back

We'll cross that bridge...

Upmarket gamesters are being pitched with a new Bridge program from CP Software.

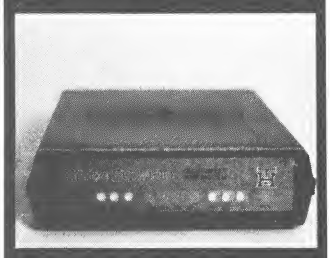
Bridge Player Galactica contains a 100 hand tutor devised by world champ Nicola Gardener as well as play options. "We get orders from Lieutenant Colonels, reverends and the like," said CP's Chris Whittington. "It's an upmarket piece of software," he claimed.

Cheap modem waits on official approval

A new modem is being offered at a special price while it awaits BABT approval.

Hi-Tec's EC2400 covers all four worldwide speeds as well as data compression techniques which, it is claimed, can pump the speed up to 4800 bps (bits per second). The EC2400 is currently being sold at £279 but Hi-Tec says that will rise to £399 whilst BABT approval is processed.

To achieve official recognition modem manufacturers have to submit new products to British Telecom's board of approval. This process can take some time and is costly. More on 01 959 6808.



• EC2400: Official go ahead will ramp up price

English as a computer language

A new text retrieval system which can understand plain English has been developed by a British firm.

STATUS/IQ doesn't require any pre-determined language – just normal English. For instance, instead of tapping in Q: Cats, Dogs: No Rabbits users can put in "Tell me everything about cats and dogs but I'm not interested in rabbits."

The system will then search its memory for every mention of cats and dogs and will also search for feline, puppy, pussy, Doberman etc.

The secret of the system is that it can pick out relevant words put to it in question form. It can also understand what info is of the most importance.

However, Harwell Computer Power's breakthrough is currently only available for minis and mainframes. A high end PC version is planned for the future.

• Status: English as she is spoke...

Industry wants YOU

Good news for anyone planning to turn their computer knowledge into a lucrative career – industry is crying out for skilled computer operators.

In a recent survey 40 per cent of companies forecast that recruitment of skilled computer users and information technology staff would be difficult over the next five years.

The firms are all worried about the lack of staff – more than 80 per cent said networking and communications specialists are the hardest to get. Many are having big problems recruiting programmers and software engineers.

All this is bad news for the business fraternity but rather better for computer literates who want to turn their hobby into juicy wage packets.

It's all in the Mindscape...

Weird US publisher Software Toolworks will be making a fully fledged appearance in the UK thanks to Mindscape.

The newly set up Mindscape camp will be selling Toolworks' high profile games here including ChessMaster 2000. That was formerly handled by Electronic Arts although a disagreement over pricing policy caused the change around. Also promised is the follow up ChessMaster 2100.

Mindscape will also be bringing in Toolworks strange surgery simulation Life and Death as well as a range of handy business gadgets such as spreadsheet add-ons.

"They're enormously successful in the States although they're very strange. They make a phenomenal amount of money," drooled Mindscape UK boss Goeff Heath.

QUATERDECK OPENS WINDOWS PATENT

Californian PC software publisher Quarterdeck has secured a patent which could give the firm power to call the shots over any windowing programs running DOS.

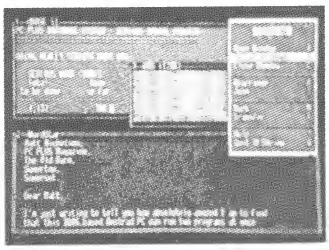
The patent was applied for five years ago and has only just been granted. Lawyers and industry veterans are poring over the legal details at the moment to see how much clout the patent gives Quarterdeck.

The patent itself is entitled: "An improved display system and memory architecture and method for displaying images in windows on a video display."

In other words the patent covers off the shelf applications programs to run windows on a computer display. Quarterdeck is looking at the possibility of gaining royalties from rival publishers who release programs fitting that bill.

"Our vision was to give PC owners the ability to run multiple DOS programs in windows," said Quarterback's president Theresa Myers. "But because of the way popular software packages were designed we had to invent a new method for displaying them concurrently in windows without having to change the software."

Quarterdeck is best known for its *DESQview* windowing DOS manager.



• Merry Window: DESQview is Quarterdeck's flagship patent bearer

From Dorset with love

A twelve strong group of Russian kids has just completed a special "computer exchange" trip to Canford School in Dorset.

The 13-17 year olds spent two hours a day working with BBC Bs, Archimedes and Apple Macs. Whilst the British youngsters were ordinary computer students the Soviet schoolkids spend much of their time learning to use micros having been specially picked.

"I think they really enjoyed using the Archies and Macs but were a little bemused by the BBC Bs," commented teacher Martin Muir. "We all worked on various applications such as setting up a comms link with another school in Russia."

The British kids have already had visited Georgia in the Soviet Union. The school, situated near Wimborne, is planning a repeat in the next couple of years.

Datel picks up peripherals duo

Datel Electronics has taken over the DK'Tronics and Ram Electronics line up of products.

Both companies are best known for peripherals such as MIDI interfaces and joysticks. Datel reckons that whilst many of the lines have been in short supply recently, it will attempt to push them through into the mainstream.

All will be available in computer stores and through mail order. Both DK'Tronics and Ram are well known in the micro add-ons field – their heyday was in the 8-bit boom of the mid-eighties. Ram had taken over DK'Tronics last year. More on 0782 744707.

JUST THE TICKET: Gold's games bus

A double decker bus carrying the latest in US Gold games is to tour the UK during the summer.

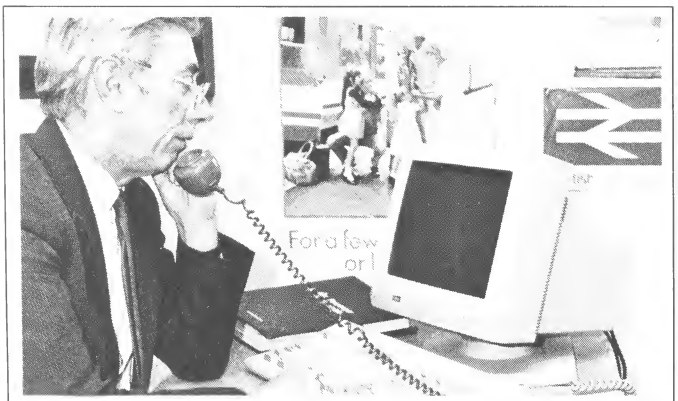
Gold says it wants gamers throughout the country to see what's going to be on offer during the autumn. In promotional terms it gives Gold the chance to access parts of the country missed by major southern computer shows.

Computer owners who can't afford to travel down to London will be given the opportunity of trying out games and seeing preview videos. Gold's biggies for this year will include *Indiana Jones' Last Crusade* , *Moonwalker* and a selection of coin-op conversions.

The bus will be parking in Boys Club Centres in cities such as Liverpool, Manchester, Leeds, Newcastle and Edinburgh. Gold has worked with the Boys Club organising various competitions in the past.

"We want to look at all the alternatives. The thing about events like the PC Show is that they attract a huge following from the South East but fewer from the North. Those areas are very important to us," said Gold's boss Geoff Brown.

Brown is currently taking a close look at the PC Show – some are suggesting that the firm will pull out this year. Gold is currently negotiating with show organiser Montbuild. We haven't decided yet," said Brown.



This guy is one of 3,000 British Rail workers who spends his working days tapping away to a British PC – Opus no less. The manufacturer is as pleased as punch having flogged 3,000 of its machines to the National rail system. Many are used for simple word processing and pay-roll jobs. 600 are used to develop BR's telephone enquiries and customer service systems, Opus tells us. Not, one would have thought, something to be terribly proud of.

Flicker free portables promised

Complaints that portable computer screens offer poor resolution could begin to thin out if an American firm achieves its aims.

Chips and Technologies has developed a screen controller which can offer flicker free portable resolution. It is claimed to be the "missing link between the VGA graphics standard and 640 by 840 resolution flat panels".

Already portable prototypes utilising the 82C45 VGA Flat Panel have been shown off by IBM, Compaq, Sharp, NEC and Toshiba. The controller can drive all the main screen standards including LCD and gas plasma.

US latches onto solid 3D

The Americans are catching on to the appeal of solid 3D games, claims leading US publisher Cinemaware

That firm, famous for its "interactive movie" style games has taken on UK development house Incentive. American gamers are to be treated to such games as Dark Side and Total Eclipse via the deal.

"Solid 3D is getting really big here in the States, the reception for such as Total Eclipse is phenomenal," said Cinemaware's Sam Poole.

Incentive, a small software house, has already attracted interest from MicroProse which publishes its games in the UK.

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For more details of other Amiga packs please call

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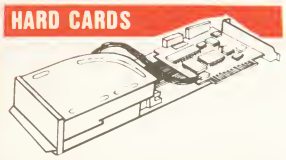

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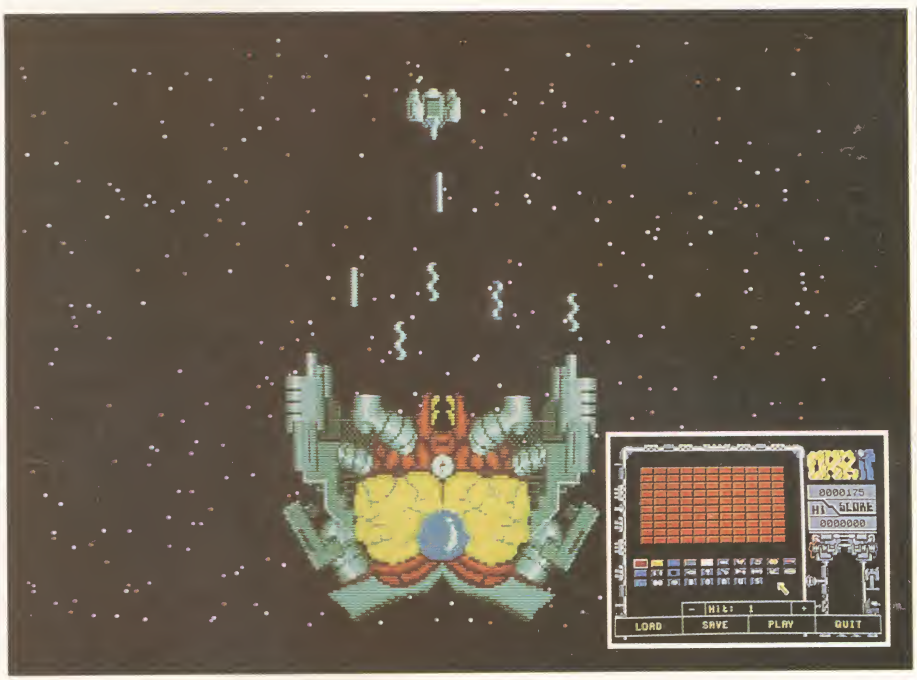
MEDIAWARE

It's a STOS up!

Mandarin Software's ST game creator, STOS, achieved critical acclaim and subsequent popularity when it was launched last year. Now Mandarin Software has released some STOS utility products, including the eagerly awaited compiler. Rik Haynes gets STarted with STOS.



• You can combine *STOS* BASIC sprites to form a meaty jobbie, as shown in this example provided by Zoltar – a shoot'em-up that comes with *STOS* BASIC. Inset: Breakout fun thanks to another game bundled with *STOS* BASIC called *Orbit*

What, where and how much?

STOS – The Games Creator • ST • BASIC • £29.95
STOS Compiler • ST • Compiler (Needs STOS BASIC) • £19.95
STOS Maestro • ST • Sampler Software • £24.95
STOS Maestro Plus • ST • Sampler Software and Hardware • £69.95
STOS Sprites 600 • ST • 600 Sprites (Needs STOS BASIC) • £14.95
All available from Mandarin Software on 0625 878888

Interested Amiga owners will be interested to know that Mandarin Software is currently working on an improved version of *STOS* on the Amiga. *AMOS* should be available shortly.

When most games players hear the mere mention of BASIC, they rapidly crawl back to their joysticks murmuring "boring" as they go. But *STOS* redefines all preconceived ideas gamesters have about Basic. With *STOS* you can produce your own games – which while not being exactly commercially viable, can look and feel very professional.

STOS is a powerful and versatile version of BASIC, which contains 340 commands with various games related functions, and supports up to 15 fully animated sprites with a size limit of 64x64 pixels. Also included in the three disk package is a sprite editor, room designer, character set editor, icon editor, music editor and screen compactor. *STOS* even has three ready made games *(Zoltar, Bullet Train* and *Orbit*), so the novice games creator can dissect them and get a good idea on how to create their own efforts.

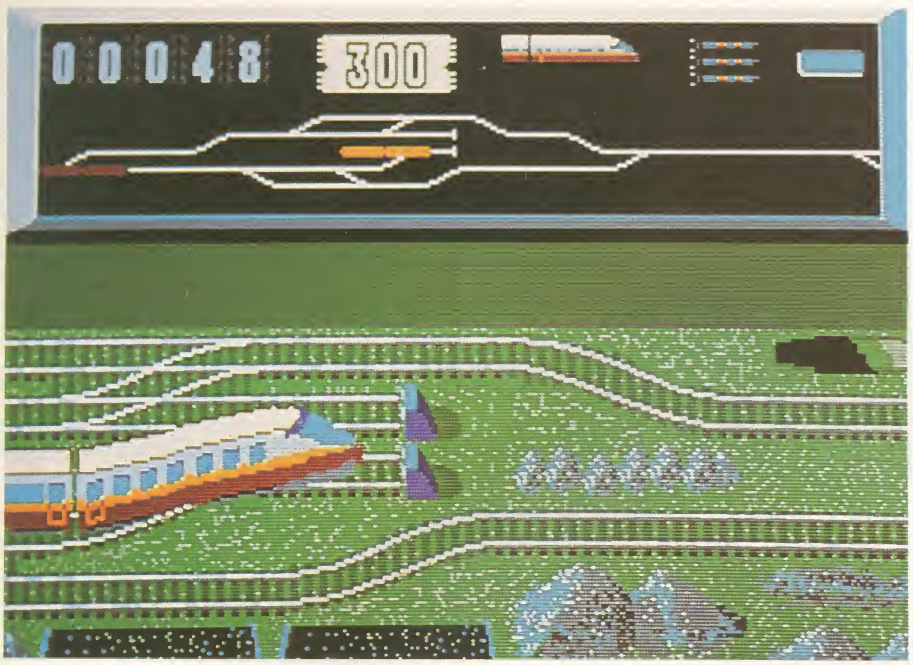
• STOS Maestro's sound sampler software gives a standard selection of sampler editing facilities

STOS is one of the best creativity tools available on the ST, and should appeal to both experienced and novice user alike – although the very inexperienced may take a little time to get used to the operating a BASIC language. After all, how many times have you bought a game, taken it home, played it and found it to be a total waste of time and money, muttering "I could do better than that pathetic pile of trash!". Well, with *STOS* you been given the chance to do just that... or eat your words!

Hasten the execution

This is the program *STOS* owners everywhere have been waiting for, the chance to speed-up their favourite creations. The greedy among them already spending the supposed royalties from writing the next *Elite, Dungeon Master* or *Interceptor.* But will the compiler make this all possible?

For £20 quid, you get the compiler program itself, plus *STOS BASIC 2.4*, a new floating point routine, disk format accessory and a RAM disk.



• The third game that's bundled with *STOS* BASIC is Bullet Train, a horizontally-scrolling action game, with you placed in control of a speedy locomotive having to make split-second decisions on what track to travel on. All the games provided with *STOS* BASIC help both the experienced and novice programmer alike, and are an immediate insight into what *STOS* can achieve

The compiler itself is reported to compile programs at a speed of 500 instructions per second, and compiling a few simple demos it seemed to work fast. The claim that games are speeded up by almost 50% does seem a little optimistic however, but even with those simple demos there was a marked improvement in execution speed after using the compiler.

The compiler is only one of a number of add-ons for the STOSser. Maestro adds to STOS BASIC's inherent lack of full specification sound support, by giving the user the chance to use sampled sound in their STOS programs. Including in the package is a standard implementation of a sampler editor, 13 new sound related STOS instructions, and a selection of sound samples ready to be incorporated into own programs. The *Plus* version of *Maestro* includes the sampling hardware needed to sample your own sounds.

Both versions of *Maestro* are overpriced (the *Plus* version ludicrously so) and don't offer much more than a standard sound sampling package. Microdeal's *Replay 4*, and Software Horizons' new £35 price busting *Mastersound*, sound samplers are far superior.

Last, and by every means least, comes *Sprites 600*, a collection of 600 sprites that would appeal only to those poor souls whose artistic skills can't stretch beyond the infamous stickperson sprite. Still, if you can't draw, this package may be of some use.

The verdict

It would appear at first glance, that the extra add-ons for *STOS* aren't absolutely essential and don't offer very good value for money. However, hardened *STOS* users who feel their latest epic could do with a upgrade in speed, could find the compiler very useful indeed. As for the other products, they feel like unnecessary ways to cash-in on the *STOS* craze. A great pity considering the loyal user base that *STOS* has attracted in such a small amount of time.

Keep 'em peeled...

Express will be doing a special feature on creating your own games in the near future. If you have any questions or tips on the subject, or have created your own epic game using a games creator then please tell us about it by writing to: Games Creators, New Computer Express, Future Publishing Limited, 4 Queen Street, Bath BA1 1EJ.

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BOOK LOOK

I am in desperate need for some advice. I have had my Amiga since November, and now games are beginning to prove very boring, except for classics such as The Kristal, Galdragons Domain and War in Middle Earth etc. I have decided to dabble in the depths of programming.

I was after a couple of books to help me on my way. I want an AmigaDOS instruction manual (such as Amiga DOS Inside and Out) and a 68000 Machine Code Tutorial Book. I have no experience of programming (except the old 10 Print "Hello", 20 Go to 10 sort of programs). So a simple and comprehensive manual is needed. I have the freebie – Devpac 1 from ST Amiga Format.

Iain McCormick, Middlesborough, Cleveland

● *There will be plenty of books on the Amiga in your local large bookshop, but some of our favourites are Amiga Programmers Guide (Compute!) £16.95 (ISBN 0-874-55028-9) and 68000 Assembly Language Programming (Osborne McGraw) £19.95 (ISBN 0.07.881232.1) and Amiga Hardware Reference Manual (Addison Wesley) £22.95 (ISBN 0-201-11077-6) all available from Computer Bookshops on 021 706 1188.*

ORAGANISE A DEMO, SOMEONE

I own an Amstrad 2086. It has VGA Graphics, 640K, a 30 MB H/D, and a running speed of 8MHz. Surely a machine with all this can produce a demo of the same standard of which an Amiga or ST can produce. And now that PCs are becoming more than a business machine, there is no excuse why authors don't write some. Or if they do, why haven't they been advertised?

One of my friends told me that a PC with VGA can show all 250000 colours on screen at once, but the software that does is not available yet and a PC with 8MHZ running speed produce 3 channel sound?

Tobin Harris age 13, Helsby, Cheshire

● *There are plenty of demos available, though they're all for spreadsheets and databases which aren't renown for their stunning graphics. I suppose it's only a matter of time before the number of good games for up-market increases – wasn't it Bill Gates who described the top range PCs with VGA as being ultimate games machines? – but I doubt that games software houses will think it's viable as a target for a few years.*

• The ultimate games machine – wot, the PC?

TEST CASE

I am sending you a short sob story with the intention of showing virus writers the serious consequences of their little pranks.

I am a student doing A level Computer Studies and as part of my course I had to write a project. A few days after running a disk of a friend's, I started getting lots of disk read/write errors. I took my computer into the dealer thinking it was the drive and was informed I had a virus which has now been cleared. Unfortunately, while the virus was active it destroyed my project which has got to be handed in a few days time. This effectively has written off my A level and two years work.

If any virus writers would like to come round and explain the humour involved in this I would gladly hear them out before removing their testicles.

Dug Barthram, Lincoln

● *I wish there was something we could do to help. As a small consolation we'll send you a piece of software for your machine (drop us a line and tell us what it is).*

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HOLMES SWEET HOLMES

It was a pleasant day in March 1989 when I visited Mr Sherlock Holmes in his rooms in Baker Street.

I had a small problem which I presented to him as he sat smoking pipe after pipe of vile smelling shag tobacco.

When I had finished my melancholy tale, he strode over to the window and brooded some time before replying.

"My dear fellow" he said, "the best advice I can give to you is to tell your story to one of those clever chaps at the offices of 'The New Computer Express'. Explain to them that you paid full price for Interceptor but that when you loaded it the monitor showed a lousy monochrome picture reminiscent of a flight over Grimsby in 1865. Further explain that all your other games load showing full colours. Also, explain that you have returned the game to Electronic Arts who say that there is nothing wrong with the colours and that they advised you to contact the shop which sold the computer to you.

"Inform them also that after having written on two occasions to the shop, your letters have been met with a pig-ignorant silence which indicates that the said shop has no idea of after-sales service.

"It is to be hoped, my dear fellow, that 'Computer Express' chaps will be able to explain a possible cause. The game you mention is supposed to have about five colours on the monitor and not monochrome as you have described.

"Further to your story, I have written to both Moriarty and my brother Mycroft requesting their assistance. Frankly, my dear friend, I would place more faith in the chaps at 'Computer Express' offices."

Holmes then said he was too busy to discuss the matter further as he was dealing with a problem concerning a large dog...

Robert Lamb, Cottingham, East Yorkshire

● *"There's not much we can deduce from this," said Watson.*

"On the contrary," replied Holmes. "We know he has an Amiga, for Interceptor was only released for that machine; we know he is a fair man, because he retains the rightful name for his county, now renamed North Humberside; and we know he is in his fifties or sixties."

"What!" ejaculated Watson. "How can you tell all this?"

"Because," Holmes continued, "the problem seems to me to be caused by his monitor's SCART lead being not properly connected, indicating, I would surmise, presbyopia – long-sightedness possibly caused by maturity."

"Amazing," said Watson. "If you can deduce all this, perhaps you could tell me why the BBC chose the Acorn Electron?"

Holmes reached for his Afghan Black Shag. "That, my dear fellow," he said smiling, as wisps of blue smoke rose from his Meerschaum, "is a mystery."

STAR OF NEIGHBOURS?

Since your magazine appeared on the scene have you ever done a comparison on games consoles? (You know - PC Engine, Sega, Nintendo, etc.) If so, which one came out tops?

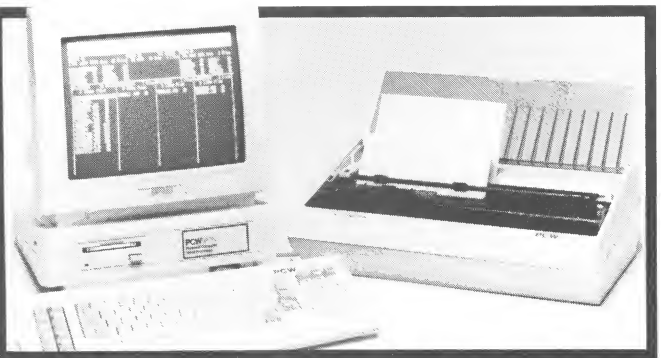
Another question ... where the hell can I get Minix for the 520ST or is it just out on the mega ST? At Poly eunuchs is standard and so I wouldn't mind it on the ST at all.

In Issue 24 someone was having trouble with gaping gaps at the top of the screen when playing Dragaons Lair on the Amiga, well a few of my friends have experienced the same problem. Could be the actual expansion unit is knackered.

Final bit - some advice for those deciding between ST/ Amiga - the greatest hardware in the world is worth a part in Neighbours, without the necessary software support.

Martin Windsor, Birmingham.

● *Currently the PC Engine is our favourite, but when the Sega megadrive comes over that will probably take over. Especially if we can get plenty of review copies. Minix for the 520ST is certainly available; it's published by McGraw-Hill and should be in your local large software shop,*



• One million PCW owners can't be wrong. Er, what was the question?

PCW PATCH

Let us go back into the mists of time, when Express wasn't even on the shelves: January 1988. I spotted an ad for a machine which has very few games for it (no not the Archie) - the PCW. This great machine (of which I have a 9512) is surprisingly good for the few games I have got for it (eg. Starglider). But this advert showed a PCW version of that cool, hip, trendy, game Carrier Command!

I was amazed and went straight down to my local dealer to buy it. But, surprise surprise, they had never heard of it. So here we are more than a year later and things have gone beyond a joke as I still cannot obtain this highly spoken of game. Can you tell me if there is a PCW 9152 version of Carrier Command? I desperately want this game on my ever faithfully PCW, which I think is highly underrated as a games machine.

T Coleman, Kent

● *Quite. The PCW is vastly underrated and you can get all types of game software – adventures, shoot-em-ups, arcade games including soccer and cricket, Tetris, Chess, Scrabble, trivia quizzes etc. – there are well over a hundred games for the PCW!*

Unfortunately, Carrier Command isn't one of them.

ST VS PCW

Is the letter from DP Jones of Gwent in issue 24 with his favourite Atari ST one of your spoof jokes just to fill up the page? He obviously knows far more about that subject than he does about computers, particularly the PCW. This letter is being written with a PCW 8512 using Protext, all system files loaded into the 368K RAM drive from my auto-start disc; and you wouldn't write it any quicker with a Compaq 386/25 or IBM mainframe, because however tired the Z80 may be, it is still a bloody sight quicker than the human brain and fingers.

It's horses for courses. I bought the PCW to do a job and for the difference in price I can buy a Nintendo or PC-Engine games machine that will out-perform both the Atari and Amiga.

John Smart, Herts.

● *You're quite right (except that we don't make up any letters on this page). Even the fastest touch typists can only manage about 120 wpm, or about a dozen operations per second, and even the Z80 can cope with that.*

We were probably a bit pessimistic on the price of a new ST, monitor and printer (though we forgot to include word processing software).

(One other correspondent castigated us for this and wondered sarcastically why we hadn't bothered to check the prices in the adverts in the same issue. Unfortunately we have to actually write the articles before the issue can come out).

PIGG SICK

I have just finished reading issue 24 of New Computer Express and have come away with the feeling that your editorial team may be slightly schizophrenic. Having read Basil Pigg's informative Micro Biography on the Amstrad PCW, and seen your well-reasoned reply to DP Jones' letter I was rather surprised to read the entries for Amstrad and the PCW in particular, in the new A-Z guide.

The entries for Acorn, Apple and Atari are objective appraisals of those companies and their respective hardware - yet for Amstrad it seems that only bile will do! I do think that calling the PCW 'the spawn of Beelzebub' a little juvenile.

Considering the large user base the PCW has, would it not be possible to expand PCW Patch to half a page in line with the other main computer sections. Surely there are some short BASIC listings and such that would help us as much as the Amiga/ ST/ PC etc.

Mr Pigg's description of the PCW user as being someone who wants to use it, rather than play around with its insides, is rather apt. I wish all Amiga/ ST users good luck with their computers; enjoy them, but don't knock others because you don't understand the fascination they have with their machines - that smacks too much of 'Electronic racism'.

John Peters, Plymouth

● *Well, there is room in Express for many voices and one of its strengths is that it can reflect many different, often conflicting, shades of opinion. I quite agree with your sentiments though.*

Whatever other computer owners think of the PCW and its owners, I'll tell you this: they sure write the best letters. Not only are they laid out perfectly (LocoScript is set up to write on A4 single sheet) but they're all correctly spelt, make their point, have a sensible sprinkling of full stops, and don't keep putting NAMES otherwise try the mail order firms that advertise in Express.

Is that computer on Jane Harris's desk really an ST?

WHAT'S THIS THEN, A?

I've written some entries which I think should have been included in the Express A-Z. I hope they raise a smile or two around the Express office.

ANSWERING MACHINE - What you hear when trying to contact the mail order company from which you ordered a hundred quids worth of software eight months ago.

ASSISTANT MANAGERS - to be found at all branches of Dixons/Comet/Currys and who will tell you "Yes, there's loads of games available for the PCW/Sinclair PC2000/Hoover Delux Carpet Master.

ARKANOID - Pre-spectrum game style which took all of three days to program and retailed for 'only' a tenner in late 1987. See also Krack Out, Giganoid, Addictaball, Batty, Impact, Super Break Out .....

Stephen Whitehead, Leeds.

● *Far worse than answering machines are those infuriating devices which play twee tunes as you wait while someone decides whether or not they're 'in a meeting'. In my dictionary they come under F.*

ROCK ON

I would like to take this opportunity to point out a number of inaccuracies in Andy Storer's review of my game 'Rock Star Ate my Hamster' (Express 22).

Firstly, he states that "the sole aim is to make as much money as possible" leading him to conclude "Rock Star is too easy. A band ... managed to make us two million quid in four months".

The sole aim of Rock Star (as stated in the playing guide) is to go platinum, by collecting four silver discs. Silver discs are won through album sales, which are dependent on sales of singles, which can be boosted by making videos. Since a single video can cost over three million pounds to make, it can be seen that the argument of Rock Star being too easy on these grounds does not hold water.

Secondly, the review states that Rock Star has no sound whatsoever. This is simply not true. The Spectrum Rock Star has both 48K and 128K sound routines. These routines are in fact quite important to the game; the music you hear when your band is practicing, recording, or charting varies according to your band members - pick heavy metal members and you get a heavy metal sound, pick a reggae group and get a reggae sound, or mix and match punk, dance, pop etc. You also get to hear how well your band is playing; their ability increases with practice.

The Commodore 64 Rock Star will be released in a few weeks. This will make full use of its improved sound chip. Likewise, the Amstrad CPC Rock Star will follow, also using its internal sound chip.

Colin Jones, Gwent

● *Sorry about the sound – this was a fault in our Spectrum which we didn't find out until after the issue went to press. However, the gameplay is still rather easy, Andy reckons. So what if a video 'can' cost three million and it 'can' boost sales? He made two mil without trying and without videos, and it's not actually clear from the play guide what the objective is.*

YOU SAY TOMATO, I SAY TOMATO

In issue 24, Basil Pigg's Micro Biography perpetuates the mistaken notion that the proper English spelling of "disk" should be "disc". I refer you to the Short Oxford English Dictionary (my copy printed in 1972, before the computer invasion), in which the listing for "disc" says simply "variant spelling of disk". In the listing for "Disk" it is clearly stated, "the better spelling is disk". This goes back to the

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ALIENS STOLE MY VOLVO
see page 5
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We exclusively reveal today the REAL REASON why mega moneybags rock-star WACKY JACKO seals himself in an OXYGEN TENT!

• Too easy? With this game you can make two million in twenty minutes. It doesn't take real rock stars as long as that, of course.

original Greek, in which the "k" was used. The word apparently became corrupted when it was latinised, as there is no"k" in Latin, but there is no reason for "English purists" to perpetuate this Italian lapse.

Incidentally, the Shorter Oxford also seems to prefer the spelling "program" over "programme". it notes that the first spelling is the 1633 original while admitting the second, a "subsequent reintroduction from the French" is more common in use. Perhaps the French import has now lost this position, due to the computing preference, and good riddance.

It is a great mistake to assume that American usage of the English language is necessarily degenerate. In many cases the Americans have retained the original English forms, while Britain has succumbed to continental influences.
Iolo Davidson, Glos

● ***Whether we like it or not, and whether the dictionary says it's 'correct' or not, 'disc' seems to me to have established itself as the standard current English spelling (except in computing). Same with 'programme'; why not tell the Radio and TV Times that they've been getting it wrong these last few decades?***

I don't see the argument that because a spelling is older, it must be somehow better. ('Bricg boards' ?). Language changes and evolves, and dictionaries do not define a language, they only describe it.Try telling your local cinema they should spell it with a K because it came from the Greek; I'm sure they'll be delighted to hear from you.

Yes, many US words or forms ('gotten', 'fall' for autumn) are old English, taken across on the Mayflower. On the other hand, I find the sort of contrived American English of politicians and computer journals quite laughable, but then I suppose the same goes for British politicians and computer journals.

SAM HOPE

The standard answer to which computer to buy is the PCW. It is generally accepted as the best choice, for those on a budget. But what do you think of the new MGT SAM?

It has colour, far superior sound 3.5" disks and that wonderful bonus of being Speccy compatible. How do you think it will fare price-wise by the time I have bought monitor and letter quality printer, and what are the software prospects like?

I have no doubts about its superiority as a computer, but if it cannot offer good word-processing then it is completely out.
Robert Smith, Bucks.

● ***We previewed the SAM in Express 6. One of its four graphics modes gives four colour 80 column 512x192 res, designed for word processing, incorporating windowing and page manipulation, so it can certainly be used for word processing in theory. Whether or not it'll be a good word processor in practice depends on third party software. Will Protext et alia be out on the SAM? That's unfortunately a question that no-one can answer, not without making things up anyway.***

The price of a SAM plus drive will be about £210. Plus printer, £400 say; plus wp software, £430 say; plus 'low-cost colour monitor' to be launched with the SAM, £480 say. All these are just conjecture though.

TOO LARGE, TOO BIG, TOO REPETITIVE

Everyone seems to agree that computer games, particularly sixteen bit games, are caught in a vicious circle whereby high prices lead to piracy which reduces sales to produce more high prices. In this connection, I would be interested to have the reactions of you and your readers to the following suggestion - that computer games are too expensive because they are too large and repetitive.

The novelty wears off and boredom sets in long before such games are completed. In the time needed to complete one of these marathon games, I would rather try several which were shorter and more to the point.

I am aware that some people would want long games, just as some like to read long novels, but I suspect that the market for shorter games would be quite large if these could be produced for around £10 each full price. Another possibility is dual option games, with both long and short versions. I would certainly buy shorter, cheaper games in the same way as I now buy paperbacks, and much more frequently than I buy current games.
D Hughes, Bucks

● ***I wonder if there isn't a counter argument – that games are long and have lots of fancy scrolling backdrops and detailed sprites because they have to justify the high price of production?***

Adventures can be too long if they fail to keep a good plot up; shoot-em-ups are all too long in the sense that they're variations on one theme. Sims and 'classic' games such as Chess and Scrabble (and Tetris?) survive because every game, however long or short, is different to the last. I still get the nagging feeling that computer games are generally too long and repetitive, and that there's a whole new bunch of game genres out there (perhaps they'll be released by new technology such as CD ROM, neural chips etc.) but I don't think that's particularly a cause of the current high 16-bit prices.

BAK DOWN

After reading your ST column in Issue 23 of Express, I was confused and I work for Microdeal. Where on earth did you get your information from?

To set the record straight there is only going to be the arcade version of Fright Night on both formats. Although Steve Bak won't actually be converting the Amiga version to the ST himself, the program will be converted in the states in coherence with the Amiga version.
Joanne Sharp
Public Relations/ Office Manager

KEY FACTS

Thank you for publishing a fine mag. every week. You really do keep up a high level of writing, full of facts and up-to-the-minute info. Keep up the good work!

The article 'keynotes' (Express 23) was well written and well-balanced, but I cannot understand Peter's idea that the ALT and CTRL on the Amiga is 'simple insanity'. He writes that he has yet to find a software package that uses the CTRL or ALT keys.

Look at Protext, in that case. This marvellous program is just about built around CTRL and ALT. Almost everything needs these in one way or another: on checking the manual's summary of all commands you will discover 75 examples of CTRL and 27 of ALT. Perhaps I have misunderstood the article and Peter did not mean what I thought he did, but it does look to me as if he has slipped up here. Can you please settle the confusion?

Finally, since you keep a goodish standard of English in your articles and (most letters) let me make a plea. Do please drop this new fashion of referring to past issues of NCE as "ish", as in 'Express ish 21'. OK, it is funny once or twice, but please don't let such really naff expressions permeate your columns - it lowers the tone of your worthwile mag.
Bernard Gerstein, Herts

● ***Seems Protext was overlooked; chalk one up for yourself. Rest assured that 'ish' was a momentary aberration and new house style sheets have been dispatched to all Express writers.***

BOUQUET SHOP

May I commend Spectravideo of Abingdon. I have a Quickshot II joystick – unfortunately one of the firing switches gave up. No complaints, as it was well out of guarantee and has seen much usage. I rang Spectravideo to find out how to order spares. "No trouble", they said, "we'll send you one free of charge".

They did, and what's more, it was in the next morning's post.
D Fickling, Wales

XEDINGLY GOOD

Thanks for the XE that I won in your Christmas competition, it's great, but I can't find any software for it. I've tried Atari, but they won't listen, or rather reply.

Could you please help, or I will have to sell it. Your magazine is great, and I like the articles that you do on viruses, MIDI, etc. they are very informative. I enjoy reaching the Great Computer Debate (GCD).

I have a C64, Atari XE and three Acorn Electrons. If anyone wants to buy an Elk (with tape, leads, etc) write to me now. Long live the '64.
Vijay Mahra, Wolverhampton

● ***Aha! Quite a few mail order places will do Atari 8-bit software, but why not advertise for Atari 8-bit software in the Express Classifieds, only £5 for 20 words (see page 46)? And if you can't get any, you could always sell your Atari there. Now, guess why we didn't publish your full address...***

SNIPPETS

PLAYING GAMES

In Issue 23, you advertised a review of games writing packages. What happened to this review? Was it, as I suspect after trying to write a game for the Amstrad PCW using Professional Adventure Writer, that they are too difficult to use and you cannot recommend any of them?
Irene Harrop, South Humberside

● ***Sorry, it fell through, but will be with you 'soon' – meanwhile there's the STOS add-ons review this week. The PCW magazine 8000 Plus ran a couple of 'beginners' tips' articles on PAW – details from them on 0225 446034.***

NI CONTRIBUTION

I have just read the Ist April I989 issue of your magazine and am grateful to you for the geography lesson I received from it. I refer to the letter in "Snippets" from Jim Black, Muckamore, Antrim, Republic of Ireland! This was an April Fool, I hope!

For those others from Britain (Norther Ireland) take heart we have not been moved a little further South and Antrim (including Muckamore village) is still British!...
P Jones, N Ireland

● ***Whoops! Sorry about that. Geography was always my worst subject at school, along with computing.***

TEAR OFF A STRIP

...I have watched the growth in number of strip-poker games. Instead of going to the bother of getting a photographer and model, and using digitizer software, why not cut out the computer pictures and simply sell a plain poker game with a porn mag? Much simpler. And how about sports games like mud wrestling, nudist games etc...
M Wood, Croydon

● ***To all strip poker players out there: for total realism, why not go out, find a girlfriend, and play strip poker with her? A pack of cards is much cheaper than the software.***

SHOW DOWN

One day I phoned Express to ask about something. I spoke to that nice Mr Glenwright who kindly filled me in with all the details. He asked me what I thought of the Software Show. I've never seen it listed. What time and day is it on please?
Nick Booth, London

● ***It was a one-off a few Sundays back. We were promised another, maybe a series, if the reaction was good. Thankfully, it was lousy.***

FEWER GAMES PAGES!

I'm sure your magazine could survive on just one or two games pages rather than the three...
G Watts-Davis, Glasgow

MORE GAMES PAGES!

The first pages I read in Express are always the games reviews and previews...
Graham Kelly, Brighton

HYPHEN SOCIETY

Can you cure the oddly hyphenated words which ap-pear from time to time in your magazine?
D Fickling, Wales

● ***Those hyp-henations were an automa-tic and ir-ritating fea-ture of our desk-top publis-hing pac-kage.***

We have now turned the auto hyphenation off.

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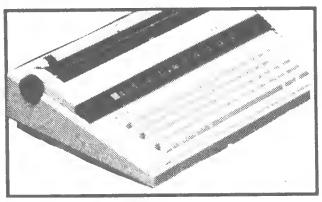

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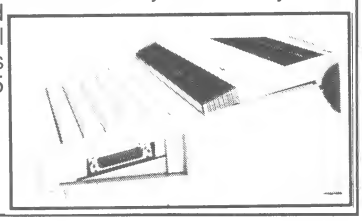

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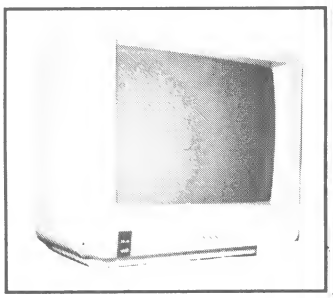

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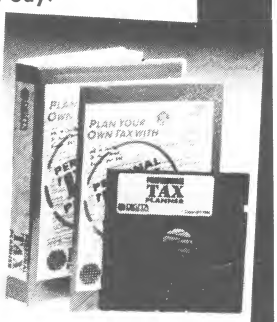

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FAST FORWARD

There's no time like the present to take a look at the future. Andy Storer maps out the millenium and offers a view of personal computing in ten years time

Since the arrival of the first 4-bit microprocessors of the early seventies, the cost of computing power has decreased in direct proportion to the amount of circuitry condensed on a single chip. The greater the density, the cheaper and more powerful the personal computer.

But semi-conductor technology is reaching its limits. Its rate of growth is slowing despite recent announcements by Intel and Motorola proclaiming their 'monster' 80486 and 68040 32-bit chips 'deliver mainframe power to the fingertip'. Whether made of silicon or germanium, semiconductors are limited by simple laws of physics. Heat generation significantly slows the speed at which electrons make connections, whilst microscopic engineering, even with advances in Very Large Scale Integration, can only put so much circuitry on to a chip.

You can push the technology further by changing the architecture - using transputer configurations to process data in parallel with RISC chips - but whilst it's conceivable that by the mid-nineties many of us will be using 32-bit systems at much cheaper relative cost than today, it won't be for any significantly different applications. It'll be more of the same with more speed and less hassle.

But we need more than power to progress beyond ever faster number-crunching, higher quality graphics and all-purpose integrated software. To achieve full voice recognition and natural language processing we require significant advances in systems architecture, storage and the man/ machine interface.

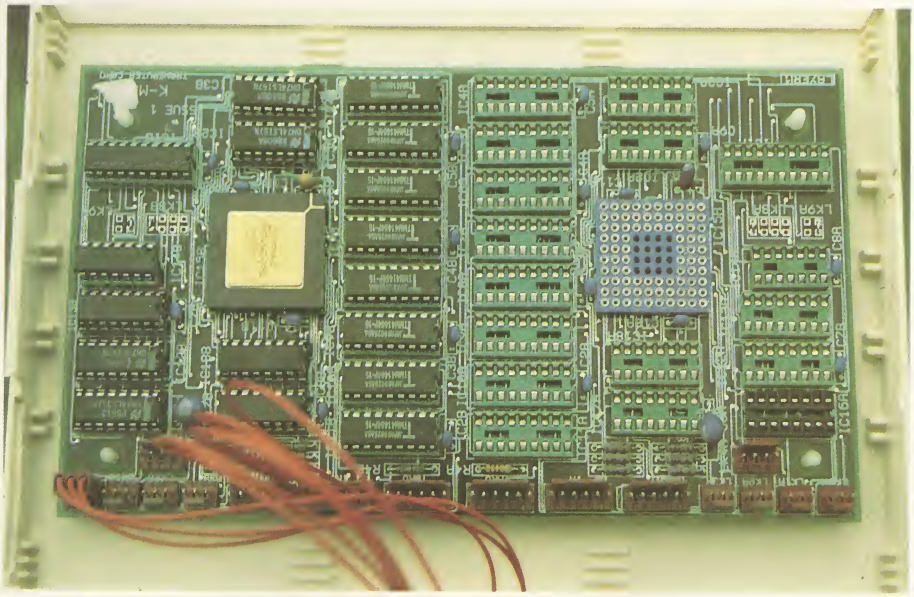
Memories of the future

The nature of memory and the way it's organised is the key to all advances in future computing. In 1980 the ZX80 offered you 1K of RAM for £100. Now you can buy a 512K card for the same money. It's not just a result of economies of scale after a whole personal computer market grew up over night; manufacturing technology itself has improved the quality control of faster, cheaper and denser memory chips.

Wafer scale technology, where large numbers of RAM chips are etched directly onto a disk, will improve quality control and reduce costs even further but more and more cheaper memory is only a small part of what you can expect.

Having greeted instant ROM based software with open arms, micro-users are now awaiting non-volatile memory without the required battery backup already implemented in the Z88, Psion Organiser and the like. But non-volatile RAM is only a good mass storage system for low-volume applications. It's refresh rates take comparatively large amounts of power and like EPROMs, it's slow and expensive.

Besides which it's going nowhere new. It's the current way memory is organised as an architecture that sets the limitation. Current computers use the Von Neumann architecture consisting of a central processor and addressable memory linked by a data bus. The parallel architecture of transputer based systems speeds



• Kuma's K-Max 1 transputer board can plug straight into an ST. The 32-bit RISC chip at its heart is capable of addressing 4 Gigabytes. There's also on-board communication allowing banks or 'farms' of transputers to be connected in parallel.

this up by dividing the same tasks between several processors but to realise the potential of true parallel processing we need the distributed processing of neural networks. Here all the activities of memory are mixed and spread throughout an entire network of interlinked memory cells – there's no areas assigned to one specific purpose.

Neural networks are best described as Associative Memory systems which organise themselves into massive layered patterns of 'knowledge'. They are able to cope with faults and incomplete data by literally making the connection, learning from experience through training. As such they're useful in applications where no algorithm is known – like robotic vision and speech recognition.

It's perhaps not a great shift to think of neural networks as forming the basis for 'organic' memory systems in the future. After all the analogy with the way in which the human brain works is clear. Software applications that ran on quasi-intelligent systems would offer a user almost intuitive assistance.

By 1999 could I expect to be using a neural computer that's learned to know me sufficiently well not only to be able to recognise my speech but suggest the words I'm using to write this article? Among other things, a kind of fabulous Thesaurus?

Maybe. But it's still silicon based. Next on the agenda would be bio-chips able to physically reproduce as additional memory and storage are required.

Put store by this

The time of magnetic storage media is over. Although you can now by a 3.5 inch 180 Meg hard disk and a 10 Meg floppy from Fujitsu, these staggering advances rely on a technology which is unstable and vulnerable.

In the short term we can expect to see smart cards replacing existing magnetic media. Smart cards planned for use in computing are just souped up phone-cards really. Whilst NEC's PC Engine console loads its games off credit card sized smarts the 'serious' computer user of the future can expect to see smart cards containing a processor, 10 Megs of applications and 1 Meg of RAM. You just slot it home in a dumb terminal consisting of a monitor and keyboard and everything else boots up from the card.

But the key development by 1999 will be the merging of smart card and optical disk technology. You can already buy CD-ROM players for your PC containing archive and reference material – the CDs they run hold upto 550 Megs of data, access times are faster and they last 3 times the life of a floppy.

However, they're Read Only for the most part although you can buy WORM equivalents where you may Write Once Read Many times. WORMs are cheap and allow you to update material that's essentially going to be used for archive purposes – your company accounts for instance. But erasable optical technology is still some way off for the mass consumer although, of course, Sony, Kodak, Phillips, 3M and Hitachi are all planning to have CD-EPROMS on the market by 1992.

By 1999 you should be able to buy a 10 Gigabyte erasable optical disk storage system, cached into 100 Megs of wafer RAM, each in turn cached into 1 Meg of fast static RAM.

Beyond that it's just a question of when the technology of light begins to replace that of electricity completely. For the ideal memory system too, whether it be based on the conventional architecture of parallel processing or some neural configuration, would ideally run on optical processors. And yes, work's going on in that area too – but it's all behind closed doors.

• Atari's POcket PC uses smart cards to hold upto 128K of program data. Their compact size disguises the massive potential they offer in terms of storage. Optical smart cards could hold a processor, megabytes of RAM and all the applications you're likely to need. Of course, Read/Write optical media are still in their infancy, but Third coast Technologies have just released a Read/Write optical drive for the Atari ST. Able to hold 900 MBytes of data the drive will set you back a tidy £4950, but as yet there's only one in the U.K.

Integrated machines...

Whatever the memory and storage capabilities of the machines around in 1999, it's likely that they'll become increasingly compact and lightweight.

As such there'll be no distinction between a desktop and laptop/portable computer – the use of smart cards will remove the need for everything except a display and means of input. You'll view applications running on the compact computer of 1999 using a colour gas plasma screen with a full bit-mapped display powered by the monitors own on-board RAM.

There'll be no dots or pixels though – lines will be real lines, polygons real polygons – software addressing library images rather than screen locations. Touch screen technology, already here for machines as humble as the ST, will replace the mouse until such a time as voice recognition systems remove the need for mouse/keyboard input entirely.

Future developments in displays by 1999 might include primitive holographic capabilities but these are still a long way off.

However the machines of 1999 will represent more of what we define as the complete low-cost

• A couple of shots from the trip to Jupiter mission based in Toronto. Here you are presented with a complete environmental simulation of shuttle voyage through the solar system with you sat in converted flight sim hydraulic cinema screening back-projected 70mm footage shot by Lucasfilm. Could cut-down versions of similar simulators find their way into our homes complete with surround-a-sound ambionics and wall sized hi definition television?

workstation of today. Besides having your portable, high-definition laser printer, your workstation will include faxcard and answerphone in a PC bundle for PCW prices.

But as compact optical disk technology becomes the new all-embracing medium – replacing the old magnetic media of video tape and cassette – it's also conceivable that the computer will merely become a dedicated peripheral of a larger optical disk based entertainment centre for the home.

• It's already possible to scan hi-res images into DTP and Art packages for manipulation everywhichway you want. Icon-driven applications allow even a novice user an easy means of navigating complex information retrieval systems. By 1999, optical disk systems will enable you to manipulate realtime video applications straight off the TV. In fact, the distinction between the PC, TV, CD and VT will have blurred to the point where all you have is a single unit.

Beyond that, the use of sophisticated smart cards will result in the computer as we know it disappearing from the desktop, and for that matter the laptop, altogether. There's no reason why mainframe systems shouldn't be accessible just like phones or electricity – just plug-in-and-go terminals in every home and workplace running integrated software accessed by your very own Profile card with its on-board neural networks.

...and integrated software

Apple Computers have probable done more than any company to change the way in which we use our machines. Its mouse-driven, icon and window system of 1982 based on the WIMP system developed by Rank Xerox released would-be users from the incomprehensibilities of MSDOS style command line inputs.

So successful was the interface, that it, and very similar systems are available for all personal computers. But WIMPs are only part of the progress in opening up the area of computing to the ordinary Joe in the street.

Natural language processing and the ability to generate ready to run programs from everyday English are the central tenets of fifth generation systems under development in Japan. Programming as a concept is likely to be replaced by Scripting – the crucial distinction being that you describe What you want to achieve rather than How you want it achieved.

By 1999 we might see something like Microsoft's DDE protocol as universal. DDE is a standard intended to be used by all software developers who write applications for the multi-tasking Windows WIMP system available for PC compatibles. Instead of choosing an integrated software package comprising word processor, database, spreadsheet and business graphics, you may pick and choose applications as you wish. The point being that the DDE data file standard allows you to load data files from any one company's application into and between those of others.

But this scenario is itself likely to be replaced by the ultimate integration. User-dedicated, intuitive neural computers running one application package that grows with your needs.

All we need to speculate on now is what the Dixons of the future will look like. Robot salesman probably wouldn't be a lot different to those manning the outlets now. Maybe even a bit more human if it comes to that!●

The shape of games to come

Imagine what computer games will be like in ten years time – keep those thoughts in mind, and see how they shape up with Rik Haynes' predictions of computer gaming in 1999...

If all those cyberpunk novelists are to be believed, playing a game in 1999 may well entail becoming one with your machine, and experiencing life-like computer simulations which are impossible to differentiate from the real thing. But are these predictions science fiction or science fact?

Where from...

Spawned by the huge popularity of dedicated arcade games coin-ops in the late seventies, computer entertainment in the home really took off in the early eighties with dedicated games consoles and microcomputers selling in their millions.

Rapid hardware development ensued over the next few years, with outstanding audio-visual improvements, greater memory and faster (more powerful) microprocessors.

By the mid-80's console popularity had all but gone, to be replaced with micro fever – mostly in the guise of buying a micro to teach the kids computing, which actually translated into buying a micro so the kids could play the latest coin-op conversion.

• Virus by Firebird, an indicator to the future of gaming software?

• The 16-bit Sega Megadrive, an indicator to the future of gaming hardware?

What about the software?

Despite the rapid developments in games hardware in the eighties, there has been far less evolution in games software. The same basic themes (shoot'em-up's, text adventures, platform games, maze games, role-playing games, machine simulations, sports simulations, exploration games, board games) have existed for years. Sure, each genre has undergone constant redefinition and enhancement – but very few original games have been developed over the years. Probably the most original title released for micro computers has been *Tetris*, a highly addictive and totally simple game from the Soviet Union of all places!

Where now...

The present craze for games software is coin-op conversions, with micro owners everywhere ever eager to play the latest coin-op smash on their humble machine. Perhaps this is the best indication as to why the games console is back with a vengeance, with major Japanese multi-nationals producing consoles with the pulling power to sell millions of units of hardware and software in a single day.

Using the current console boom as a possible indicator, our predictions for games hardware and software are informed guesses on what it could be like to play a game in 1999...

Games would be run on advanced console decks, utilising massive high-definition displays (possibliy with holographic capabilities), multi-channel stereo audio with CD (and better) quality, all hooked up to neuro-sensory equipment with all round environment control, with the player experiencing sensations indistinguishable from the real thing.

Games would be stored on sleek smart cards (the size of current credit cards). These robust little cards would instantly load into your deck.

Another exciting development would be the ability to interact with other players around the globe using worldwide on-line games networks.

We expect no radical developments in the games software itself – based on the lack of development in this area thus far. What we do expect however, is far greater realism, made possible by hardware advancements in speed and audio-visual quality – a logical extension of the hardware technology we currently possess, with just a few tweaks and surprises to keep things interesting.

Let's hope games designers prove us wrong...

THREE WAYS GAMES COULD GO...

Interactive Cinema

US software company Cinemaware is already laying the foundations for micro controlled interactive games using CD-ROM technology. It currently has a PC/ CD-ROM set-up playing an enhanced version of its most popular strategy action game, Defender of the Crown. This version has improved audio, but future developments will undoubtedly include visuals pulled from the CD as well.

In addition, as links with the movie industry grow closer – *Robocop* being a perfect example of this liaison – pictures and sounds grabbed directly from the film could be used inside the game. Unfortunately this audio-visual improvement may overshadow further development in gameplay.

On-Line Adventures

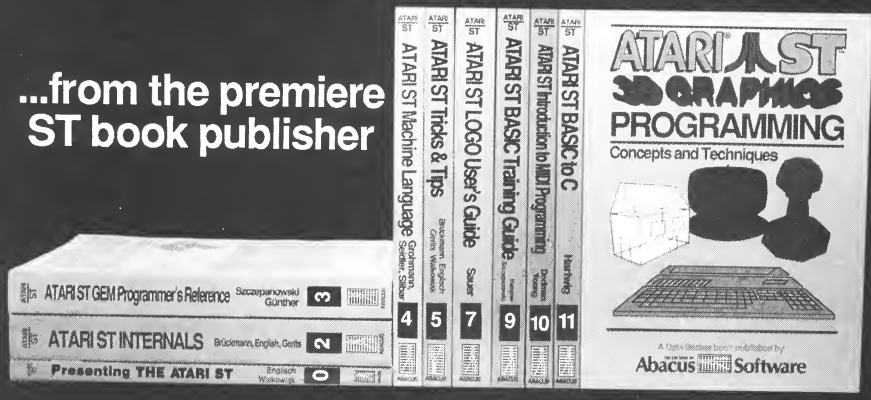
Of course there are already examples of this type of game system in-use today, with MUD being the most obvious example. Developments in this field could include not just text adventures, but also full graphic adventures if digital telephone lines are installed on a massive basis. The problem area with this way to play, is the cost and speed at which it operates. Current costs are prohibitive to the majority of users, so imagine the possible costs involved with setting-up and running a digital system. Hopefully, advances in technology should sort out any speed problems.

Multi-user shoot'em-ups

Using the same principle as on-line adventures, digital phone lines could also provide the audio-visual quality needed to produce decent shoot'em-ups. Speed would be even more of a problem, as will on-line charges.

BESTSELLERS

...from the premiere ST book publisher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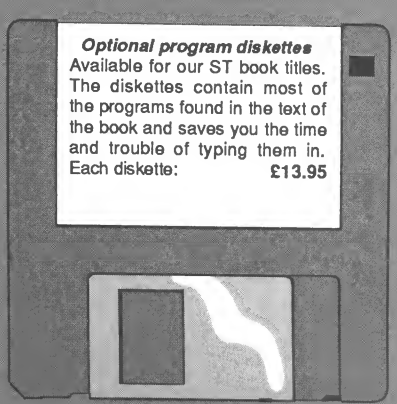

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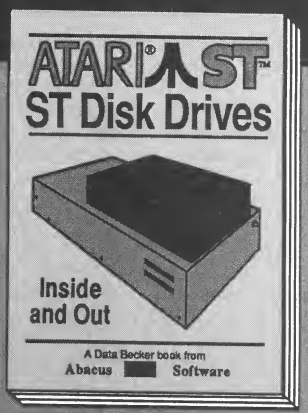

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Comms and goes

Fancy a go at comms? The range of software and books available is staggering. To give you the best of both worlds, two new books come with the PC software they describe included. How do these software packages-cum-manuals-cum-books shape up? Eric McBride investigates...

ON-LINE WITH BITCOM

BUD E SMITH • £34.75 (inc. software) • COMPUTER BOOKSHOPS (021 706 1250) • ISBN 0-553-34669-4

Many would-be comms freaks armed with PC, modem and software are left wondering just how it all fits together. They have everything necessary for a session on-line except one vital ingredient - knowledge. Which file transfer protocol should they use? How can secondary tasks be executed whilst the software is on-line and what if they want to automate some of the more boring processes assoociated with logging on to bulletin boards, such as passing passwords and user I.D.s etc. ?

This book takes care of all that by providing you with the well-known communications package BitCom on disk and a clearly written textbook which deals with all parts of the program, how to get the most from the more advanced features, and yet assumes no knowledge on your part.

The book opens with an introduction to the software and details the hardware requirments necessary to run the package. Next comes a general description of just what a communications program does, specifically what the BitCom program can do for you in your electronic endeavours to communicate.

The BitCom program isn't copy protected so you are encouraged to make a back-up copy and to store the original in a safe place - the Americans seem to have a much more enlightened attitude to personal back-ups of software packages.

The book makes no assumptions about your prior knowledge, consequently, almost every chapter is simple to grasp, yet very informative and comprehensive.

Sections covering every aspect of communications follow each other in logical order. After the initial overview, you are taken through bulletin board systems and the on-line world in general, a guided tour of BIX which is one of the largest information providers in the States (this is of limited value in the UK, but does make for interesting reading). Sending and recieving text and program files is an area in which a lot of of confusion can arise. On-line With BitCom provides a complete description of all available protocols for file transfer making the whole process simple and painless. Remember, the book is not dealing with abstract concepts, but with the actual software that's running on yourPC.

On-line With BitCom is an excellent introduction and thorough step-by-step guide to all things comms. Unfortunately, one or two of the topics discussed apply only to those using a modem in the USA such as the information service BIX, but don't let that put you off – for your money you get an excellent comms package and jolly good textbook.

✪ ✪ ✪

THE COMPLETE ELECTRONIC BULLETIN BOARD STARTER KIT

BOWEN & PEYTON • £36.95+VAT (inc. software) • COMPUTER BOOKSHOPS • ISBN 0-553-43552-4

There is a lot of interest in the world of comms at the moment. Ordinary computer users are buying modems and the software to drive them and are logging on to bulletin board services and public information providers such as Prestel up and down the country.

Fine, but what if you want to run your own bulletin board? Where do you start, what do you need and will you be able to use your existing machine? This new book by Charles Bowen and David Peyton is based around an actual bulletin board package - the RBBS-PC by Tom Mack - and details everything you need to know about setting-up and running a board on your IBM-PC or compatible.

The first departure from the usual text on comms is that the RBBS-PC software is included with the book - that's right! The full package and all the source code written in BASIC, to allow you to modify and mould the board to suit your needs. It comes in the form of two archived files contained on 5.25 inch disk which, once un-arced, can be listed and examined, changed and re-compiled to produce a bulletin board that's just the way you want it.

The book begins with an overview of the bulletin board 'movement' written in the 'feeling good 'n' getting groovy' style of transatlantic authors. From there, you are told in clear and concise American English how to configure the board for your computer system.

The first three chapters deal with the question of neccessary hardware, what to look for when buying a modem and how to un-arc the software disks so that you may use the programs contained thereon, and you will find yourself quickly becoming conversant with the concept of the bulletin board.

Chapter 6 shows you how to run the board in test mode to allow you to log on as if you were a caller to the board. You can examine and leave messages, create dummy records and generally rummage around. After that, it's time to switch on and wait for your first real caller.

The final chapters of the book make up a complete technical reference manual to all aspects of the RBBS-PC software package written by the author of the software himself. Contained within are such valuable snippets as what to do if you don't have a Hayes compatible modem (Hayes is a modem manufacturer whose modem command language has been adopted as an un-official standard amongst modem manufacturers) and patching the BASIC source code.

For anyone who fancies starting their own BBS, this book is highly recommended.

✪ ✪ ✪ ✪

GET THE MOST OUT OF COMPUSERVE

BOWEN & PEYTON • £20.45 • COMPUTER BOOKSHOPS • ISBN 0-553-34707-1

Let me say at the outset that this book will be of limited use to anyone using a modem based in the UK. The book details the history and capabilities of America's largest electronic bulletin board and information provider, CompuServe.

CompuServe began life in Columbus, America back in 1969 as a method of leasing computer time and data storage facilties to corporations and local government. After 10 years of life CompuServe opened its silicon doors to the new breed of small computers known as home micros. Computer users all over the States could call up CompuServe, contact other users, upload and download information and generally interact on-line with the largest information service in America.

At explaining its subject, the book excels. Chapter after weighty chapter detailing every aspect of CompuServe. If this was the States, I wouldn't hesitate to award the book five stars, but in the UK this is for real fans only. Interesting though it is, two stars will have to suffice.

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First things first

If you're new, or fairly new, to computers, there's nothing quite like the excitement of unpacking a new machine and setting it up for the first time. Especially if it's your first, or a substantial upgrade to your existing computer. Peter Worlock guides you through those first crucial minutes...

Once you've unpacked all the boxes, check to see that all of the various bits have been included, especially power cables and connecting cables (printers never come with an interface lead - you have to supply your own).

Before you start plugging things together, always have a look at the manual to make sure there are no hidden pitfalls. Printers usually have travelling screws, for example. If you don't remove these you could do damage when you try to use the printer. Even if everything looks straightforward, a quick look at the documentation won't hurt.

Assembling computer equipment is usually a simple matter of plugging bits into other bits and there's small potential for disaster. However, it's always worth touching something large and metallic (a filing cabinet does nicely) to ground yourself for static before touching any exposed bits like circuit boards, or cable connectors.

It should go without saying, but we'll mention it anyway: make sure that everything is disconnected from the mains, and all on/off switches are off, before you start.

Once all the bits are identified and correctly plugged together, check your manual again. Some peripherals, and some computers, are fussy about what gets powered on first. The Commodore 64, for example, can be a bit uppity if you don't turn on printers before you turn on the 64 itself. The reason is that computers often check to see what peripherals are attached at boot-up and they can only be identified if they're turned on before the computer.

Finally, you turn on the power and everything works. Lucky you.

But sometimes it won't work, and that's when things get interesting.

There are symptoms of problems which brook no argument. If things explode, belch flame and smoke, screech, emit green slime or generally behave like something from a technophobe's nightmare, switch everything off, unplug the offending article, and prepare for the long trek to the dealer.

Houston, we have a problem

More often, though, the only sign that something is wrong is that nothing happens. Even things that are supposed to happen don't happen. So try the following:

- Visually examine all the connections and make sure everything is securely plugged in. If anything looks loose, power everything off and then you can physically adjust cables and connectors.
- Check that all power indicators are lit. If any aren't, make sure that the cable and connector are secure, then check the fuse. Two points here: don't use 13 amp fuses with computer equipment. Generally a 3 or 5 amp fuse will be correct. Also, some devices have an internal fuse so you'll need to check that too.
- If you have what seems to be a dead monitor, try to check it against something else - another computer, or a video recorder. If it doesn't work there, you have a genuinely dead monitor but the fault may be with the computer's video adaptor (try the computer with a TV) or with the cable.
- If the offending item is a printer that shows power-on but won't work from the computer, use the built-in self-test. All printers have one - details will be in your manual. If this works, again there are two possibilities: either the cable is at fault, or the computer's interface has died.
- If you have added something to your existing system and the computer itself is malfunctioning, remove the new equipment. If the computer works again, try carefully re-installing the offending item. Expansion boards are particularly dodgy in this area since its quite easy for a slightly mis-fitting board to create short-circuits or to nobble the computer in other ways.

If you're thinking of upgrading, these problems are the best reason for keeping the current machine before you have the new one up and running. Your existing system might allow you to try things like printers, monitors and external drives from both the old and new machines.

What should you do with a dead computer?

If your new pride and joy is truly dead, return it to your dealer. What happens next depends on the manufacturer, the dealer, and how long you've had it.

The best manufacturers and dealers will immediately offer you a brand new replacement. Others will only offer that if you return the offending item within a short period of the actual purchase - usually two weeks. For this reason, if you buy a computer as a gift for someone it's worth testing it before you put it safely away until the big day. If it is dodgy, the big day may be too late.

Should your brand-new dead computer be a Commodore 64, simply pack everything into the appropriate boxes and return them to your dealer. You need explain nothing since the presence of C64 boxes in your arms will tell him all he needs to know.

The unfortunate fact appears to be that while Commodore's C64 quality control department was having lunch last year, several thousand machines slipped quietly out of the factory. Dealers have been reporting that as many has half of these C64s have been pronounced Dead On Arrival.

If you return the computer within the grace period, the dealer must give you a replacement, or a cash refund. The dealer may offer to send your duff machine off for repair. You don't have to accept this, and probably shouldn't. You've paid for the equipment and you have a right to have a fully working system, immediately. If the dealer can't offer you one, it's up to you whether you want to wait or not, but you are perfectly within your rights in demanding your money back so that you can go to another dealer and buy a working machine.

Do not be fobbed off with a credit voucher. If the dealer says it isn't policy to give refunds, point out that the law says he has to. Threaten lawyers, trading standards authorities, letters to the press, and Esther Rantzen. But try to be polite and don't get abusive - after all, the dealer in his turn is being shafted by the manufacturer.

And note that this only applies to dead or otherwise unusable equipment. If you just happen to have changed your mind, or have bought the machine for someone else and found they don't want it, or got one from their rich Uncle Sid, that's your problem.

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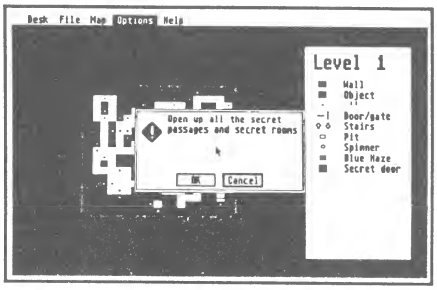

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C

C (L): Programming language which evolved from BCPL and which – along with the Unix operating system, written for the most part in C – became incredibly popular in the early and middle part of the '80s. C is popular for its speed and portability, i.e. the ease with which it can be transferred to other machines and is available for most of the popular computers. Source code written in C has a reputation for being incomprehensible to anyone else, and often to the writers themselves. Here is an example of the language which prints the results of a calculation.

```
main ()
{
int length, width, area, circum;
length = 40;
width = 30;
area = length * width;
circum = 2 * (length + width);
printf("Length %5d\n",length);
printf("Width %5d\n",width);
printf("\n");
printf("Area %5d\n",area);
printf("Circumference
%5d\n",circum);
}
```

CACHE (T): A portion of memory which is set aside to hold much-accessed parts of a hard disk, thereby limiting the number of disk accesses necessary and speeding up the overall computing time of a particular application.

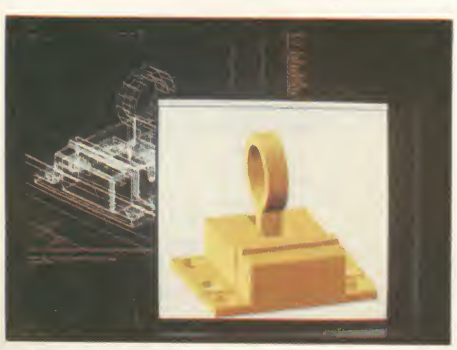
CAD (T): Computer Aided Design. CAD applications programs allow the user to design complex structures on-screen, and then manipulate, rescale and eventually print the object. See also CAM.

CAM (T): Computer Aided Manufacture. The process of manufacture using computer controlled machines or robots rather than humans. A well-known example is the low-end Fiat car manufactured entirely by robots. See also CAD.

CAMBRIDGE COMPUTER (Co.): The business alter-ego of Sir Clive Sinclair. The company is responsible for the design and marketing of the Z88, a laptop computer featuring built in word processing, database and spreadsheet software, which has become very popular with journalists and businesspersons on the move.

• Clive Sinclair's Cambridge Computer responsible for the popular Z88

CAPTAIN BLOOD (G): Programmed by French company Infrogram, the game takes space trading to new heights with superb graphics and depth of play. The player can visit up to 32000 planets, meet aliens, trade or destroy them and generally cavort about the (un)known universe.



• CAD packages allow the design and manipulation of complex structures on-screen

CARRIAGE RETURN (T): A.K.A. CR. The operation of forcing the next character to be printed on the left side of the screen or printer (it doesn't include moving one line downwards).

CARRIER (T): The continuous tone transmitted by a modem which is varied in pitch in order to send data in the form of 'intelligent' signals.

CARRIER COMMAND (G): Solid 3-D arcade strategy game involving a futuristic aitcraft carrier and various other vehicles. The game is an excellent example of the multi-viewpoint game which allows the player to adopt several views and switch between them with ease.

CARTRIDGE (T): Plastic case which houses a read-only memory chip. The ROM holds a program and when the cartridge is plugged into the appropriate slot on the computer, the machine has instant access to the program. Cartridges usually hold 16K of program or data, but can be made to be larger by 'piggy-backing' extra memory on top. See also PIGGY-BACKING.

CASIO (Co.): Japanese electronics company responsible for a range of products such as calculators, but was one of the first companies to produce and market hand-held computers. The machines usually came with 1K or 2K of RAM and had a built-in BASIC allowing them to be programmed for real – albeit, cut down – applications.

CATHODE RAY TUBE (T): The technology which allows a monitor to display a picture. The cathode ray tube 'fires' a beam of electrons at the screen which is coated on the inside with phosphor. Electrons hitting the phosphor dots glow and the resulting pattern of dots makes the picture.

CD-ROM (T): Type of read-only memory employing the CD disk as a medium for storage. Although vast amounts of data can be stored and retrieved from the CD (e.g. whole encyclopaedias complete with illustrations) the technology has remained obscure in the computer market due to its relatively high price and the inability of the disks to be written to.

• Outside the educational and music markets CD ROM has remained obscure

CENTRONICS (T): Brand name which is now used as a generic name (in the same way the brand name Hoover has replaced vacuum as a verb) to describe a parallel printer port. In the parallel printer port, the 'bits' of data are sent to the printer 7 at a time, rather than in the consecutive fashion of the serial printer port.

CHEETAH (Co.): Company which began life designing and marketing peripherals for the Spectrum range of computers and which progressed to MIDI keyboards upon the demise of the ZX Spectrum.

CHESS (GG): Probably the most programmed computer game ever. The first games ever written for computers were chess games, as the logic of the game can be easily translated into program instructions. Today, chess programs abound, and almost every machine can sport at least one chess program.

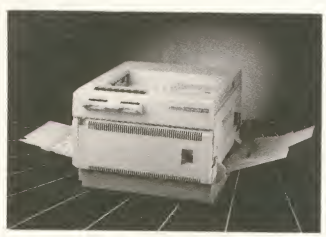
• Colossus Chesss thrashes allcomers

CHESS COMPUTERS (C): Dedicated machines which offer the game of chess at various levels of difficulty. The first chess computers were large and not very adept at the game. Nowadays, a machine powered by batteries which can be held in the palm of the hand, can offer many levels of difficulty and thrash all but the most accomplished of players. Large chess computers have reached the levels where they can occasionally beat Grand Masters.

CHIP (T): Tiny slither of silicon which is etched with many thousands of discrete components, such as transistors and resistors, encased in plastic with metal legs to allow connection to the outside world, and then placed in circuit.

CHOPLIFTER (G): Game based on the American Blue Light tactical operations squad's attempted attack on Tehran in order to free the American hostages being held there. The game features a helicopter controlled by the player attacking other choppers, tanks etc.

CITIZEN (Co.) Japanese consumer electronics company which produces a range of domestic electronic products, but is mainly known for its range of printers.



• Citzen 112 Laser printer

CLICKING (T): The process of pressing a mouse button to select something depicted onscreen. Also includes double-clicking – the rapid depression of the mouse buttons in succession.

CLIP ART (T): Phrase describing 'ready-made' pictures on disk which can be used to illustrate text in desk top publishing packages.

CLONE (T): Direct copy of a machine (usually the IBM-PC) by a

third party manufacturer. The clone machine can run all of the available software of the cloned machine, is significantly cheaper and offers more expansion slots or other incentives to tempt the would-be PC buyer.

CMOS (T): Stands for Complementary Metal Oxide Semiconductors and is a process of making metal oxide semiconductors which use almost no power and yet are much faster.

COBOL (L): Programming language developed in the late '50s, which was the first high level language aimed fairly and squarely at the business/data processing market. COBOL itself stands for COmmon Business Orientated Language. The language consists of English-like statements which are used to process salaries, employee records, stock – everything connected with the runing of a business.

CODEMASTERS (Co.): Software house founded in 1986 by two young programmers, David and Richard Darling. The company is responsible for a range of cheap and cheerful budget games and gained a lot of media attention due to the age of the founders.

• Darlings of the budget world?

COIN-OPS (GG): Machines running computer games, gathered together in arcades and operated by a coin of the realm. Many of the most popular games are converted for use by home micros and regularly feature in the lists of wants by home micro users i.e. Oh! I wish someone would convert Afterburner for my Dragon with 64K add-on.

COLOSSUS CHESS (G): Superior chess game programmed by David Bryant who was responsible for the popular White Knight on the BBC computer. The game beat every other chess game of the day hands down when first launched. Colossus Chess has evolved through several versions and is currently Colossus Chess X, featuring smooth animation of pieces in the form of characters and a multitude of view points for the board.

COMMANDO (G): The first in a popular line of coin-op conversions from Capcom, in which you adopt the role of a homicidal commando slaughtering hither and thither. The game enjoyed a long run and high position in the charts.

COMMODORE BUSINESS MACHINES (Co.): The company which began as a manufacturer of typewriters, moved to calculators in the '70s and eventually began to produce computers. Beginning with the PET in 1977, the VIC 20 in 1980 and moving through the phenomenally successful C64 launched in 1982, the company built up an excellent reputation and large following in the home micro market under its guiding light Jack Tramiel. In 1984, Tramiel resigned as Commodore's chief executive and went on to buy Atari. After a wobbly start under new management, the company released the Amiga range of machines 1986. At first, the computer lacked large sales due to the popularity of Atari's rival machine the ST, but now things are changing and the Amiga is becomming one of the most popular micros in the world ensuring the continued success of Commodore.

• Commodore bounce back with the Amiga

COMMODORE AMIGA (C): 16-bit machine launched by Commodore in 1986 which employs the Motorola 68000 as its CPU and various other custom chips handling graphics and sound. These provide the machine with superior capabilities when compared to similar computers. Three machines make up the range and these are the 500, the 1000 and the 2000. The 2000 offers IBM compatibility.

COMMS (T): Abbreviation for communications i.e. the process of linking two or more computers via some medium, usually a cable or the telephone lines, for the transfer of data, programs and so on.

COMPAQ (Co.): Manufacturer of IBM-PC compatibles for the business market. The company is also responsible for a range of lap-tops and luggables. Compaq remain relatively obscure in the UK marketplace due in part to the rather expensive pricing structure of its range but are seen by many as the cheaper but still up-market alternative to IBM.

• Just one of the many PC compatibles

COMPATIBLE (T): Used to describe machines which can make use of one another's programs and data. The term is usually used with the PC to describe third-party machines which are directly compatible with the IBM machine. See also CLONE.

COMPILER (L): A program which takes source code computer instructions written in some high level language like C and 'compiles', or converts, them into code for the host machine.

COMPUTER (T): A device – usually electronic – which is able to perform calculations and other operations on data by obeying a series of instructions in the form of a program.

COMPUTER WEEKLY (Publication): Weekly organ of the computer trade, carrying in-depth articles, news, views and jobs involving all aspects of the computer industry. The paper has been running for 27 years.

CONCURRENT (T): Two or more processes carried out within the same specified time interval entirely independently of one another.

CONSOLE (T): Generic name describing a computer terminal i.e. the part of the computer system that allows humans to communicate with the computer.

CO-PROCESSOR (T): A second processor within a computer which takes over and is dedicated to some specified task i.e. the maths co-processor, which performs all the mathematical operations, thereby freeing the main processor and speeding up computing.

COPY PROTECTION (T): Method of making secure by physical or other means the programs and data contained on disk, tape etc. The actual method can follow many paths but usually involves the use of either a 'dongle' – an electronic device, which has to plugged into the computer before the software can be run – or protection by programming methods to prevent stopping, listing or copying of the program.

COTRA (P): The Computer Threat Research Association. A group set up to research, investigate and combat the spread of virus programs. The association is made up of interested parties from users to large corporations.

COUSENS, ROD (P): Boss of Activision UK and well-known industry mouthpiece leading the fight against software plagiarism.

CP/M (OS): Control Program for Micros. Written by Gary Kildall in the late '70s, CP/M was the first operating system written especially for microcomputers, in particular, those using the Zilog Z80 CPU. CP/M takes care of such functions as input/output, screen displays and other housekeeping functions. CP/M evolved through many configurations in order to keep up with trends and developments in the micro market.

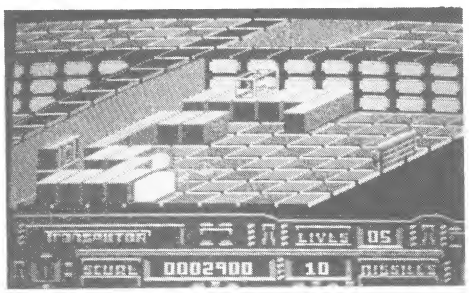
CPC (C): The Amstrad CPC range of 8-bit computers. For more information, see AMSTRAD CPC.

CPU (T): The main chip within a computer which handles the processing of data and instructions 'given' to it by the other components. CPU stands for Central Processing Unit.

CRASH (T): Term used to describe the process of a computer system stopping due to a bug in the software the machine is running – the equivalent of a car stalling. See also BUG.

CRAY (C): A range of supercomputers designed and manufacturer Cray Research Inc., the company founded by Seymour Cray. The range includes the Cray 2, which can process up to a billion instructions per second.

CRAZY COMET (G): Mindless shoot-em-up, notable for the involvement of Rob Hubbard who wrote the sound track. Its sequel became the first game to feature four channel sound and sampled speech on the C64.



• Blood 'n' gore or budget beauties?

CRL (Co.): The company responsible for a range of tacky horror games such as Jack the Ripper, Frankenstein and Dracula. The only moderate success of the company was Tau Ceti, a space trading game.

CUMANA (Co.): British company best known for its range of disk drives. The firm markets a range of drives both hard and floppy for almost every popular home/small business micro.

• Cumana from Nirvana

CURSOR (T): A position indicator taking the form of a highlighted block, blinking or flashing line which is displayed on a computer monitor.

CUT AND PASTE (T): The process of removing blocks of text within a word processor (cut) and transferring them (paste) to another part of the same or different document.

CYBER-PUNK(GG): Hacking subculture concerning a genre inspired by the film Bladrunner. The genre details a claustrophobic bleak vision of the future pioneered by writer William Gibson.

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PC2286: Winner or Loser?

After several stabs at the micro computer market with varying degrees of success, Amstrad has finally launched a range of machines aimed at the hi-tech end of the market – the PC2000 range. Its 2286 is finally in the shops – how does it shape up? Jerry Glenwright puts it through its paces...

• The VGA screen gives excellent picture quality

Amstrad has never been overly concerned with the leading edge of technology when it came to designing and marketing small computers. The strategy employed by the company has always been to box existing technology and sell it at a slightly cheaper price than other computer manufacturers to Joe and Jo Public.

This policy has served Amstrad admirably, and has allowed the company to be one of the biggest – in terms of wealth generation – in the UK.

The net result of all these computer sales has been to provide the ordinary person in the street with technology which would have been unthinkable just a few years ago. In 1986, the PC was confined almost exclusively to a user base made up of businesses and the power user with money to burn. Amstrad designed a cheap little PC, coupled it with persuasive advertising and the general populace bought it in droves. It is now nothing special for the average home micro user to employ a PC compatible for their computing.

But this is 1989, and the power user has progressed to machines built around the more powerful 286 and 386 chips. Enter Amstrad: see a (possible) gap in the market and exploit it, with a new range of machines using the 'latest' chips to drive them. Remember, technology which is at the leading edge to ordinary users has usually been around for several years. The 286 and, to a lesser extent, the 386 chips constitute this new technology. Both chips have been around for a while, but it's only now that they are filtering through to be used in affordable machines.

The Amstrad PC2286 is one of the new breed of machines employing (almost) state of the art technology. The machine has an Intel 286 central processor running at 12.5 MHz. Backing storage in the form of a 3.5 inch floppy and a 40Mb hard drive. A VGA graphics adapter providing the display. There are four 16-bit and one 8-bit expansion slots, and 1Mb of RAM is supplied as standard.

On paper, the outward appearance of the Amstrad PC2286 must have looked suitably futuristic. Unfortunately, in the plastic, sorry, flesh, the machine looks as if it came from a Gerry and Sylvia Anderson production. The main case has a large footprint and wouldn't look out of place being tended by solemn persons wearing white lab coats.

The monitor case is smaller and neater than that of other Amstrad compatibles. The keyboard is larger and has cut away corners at the front and a 'rest' for the heel of your hands when typing.

• Forget that old budget image: the PC2286 is part of Amstrad's sortie into the higher end of the market

OK, that's the appearance of the machine out of the way – remember, beauty is in the eye of the beholder and unless you have need of a machine with a small footprint, or let the aesthetics of a machine colour your judgement, you shouldn't place too much emphasis on outward appearances.

After unpacking, the PC2286 fits together in similar fashion to its stablemate the PC1640. Four small batteries fit into the upper part of the CPU case and the monitor sits in a slot above them. Both machine and monitor have a hard wired cable to provide power.

Switching on the machine, you are provided with Amstrad's familiar 'Please Wait...' message then after quite a wait the machine displays some guff about clearing hardware RAM pages, frames etc., clears the screen, prints up an MS-DOS 4.01 message – yes, the PC2286 runs the new DOS – and provides you with a prompt. You are now sitting with an enormously powerful 286 machine just itching to go – at least, that's the story...

Tick, VGA

Instantly noticeable is the superior monitor display. The machine has a VGA graphics adapter as standard and a screen that can handle it. The monitor provides a rock-steady picture with good contrast and colour over the whole displayed area.

VGA is a necessary standard for some of the more advanced CAD applications and this monitor has what it takes. With all the software we tried, the machine's display was excellent. Even games will benefit with the use of VGA (providing they support it of course). Electronic Arts new game 688 Sub Attack which does support VGA graphics adaptors gave wonderful colour and high-resolution pictures.

The other immediately noticeable advantage of an Amstrad machine is the volume control on the side of the CPU case. The PC is not exactly renowned for its sound capabilities and most games have you reaching for the volume control if you're lucky enough to have one.

After the monitor, the keyboard is the next most used item of a machine. You issue almost all of your commands to the machine via the keyboard

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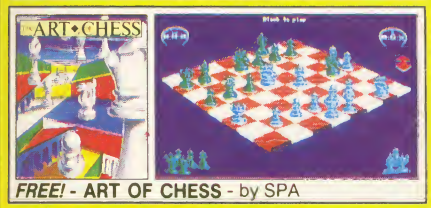

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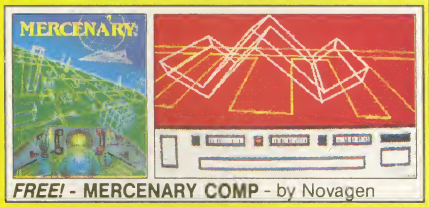

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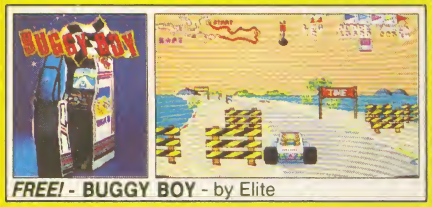

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Do you already own a computer
If so, which one do you own?

and so it has to be a good one. The early Amstrad PC keyboards are dreadful. Third party manufacturers quickly made a killing supplying usable keyboards to PC1512/1640 owners. The PPC range of portable Amstrads have full size keyboards which, although a little 'cheap', were very usable. The PC2286 carries on this tradition with a keyboard which feels very similar to those of the PPC machines. It's 'clunky' but positive, and typing for long periods is feasible using this keyboard.

It drives me...

The CPU-case has a sloping front panel with an LED power-on light, a single 3.5 floppy disk drive and a 40Mb hard drive. The floppy performs adequately but the hard drive leaves a little to be desired. If you're not used to running a system with a hard drive then you won't notice how slow it is, but if your current machine has a hard drive or you use a PC at work then you'll notice the long waits associated with every hard drive access or boot-up.

The drive has an average seek time of 100.2ms, a data transfer rate of 260.2 KB/sec and a performance index of 2.098, which is excessive for a machine of this class (compare these figures with the Opus IV which has an average seek time of 68.5ms).

At the heart of the machine is an Intel 286 central processor offering performance at 5 times that of a standard PC/XT.

The 286 can supply you with raw computing power which would have needed a warehouse to contain the machine 20 years ago. All your applications will run at lightning speed, particularly those with intensive calculations such as spreadsheets, CAD and DTP packages. No waiting for screen updates whilst the machine calculates a new set of relative co-ordinates.

The verdict

Well, although the machine is of poor design – a flimsy plastic case with numerous cooling vents and slots typical of Amstrad – it is of reasonable quality. The monitor is very good. A steady display with nice fat colours and crisp contrast, making it easy on the eye and very usable.

The keyboard is an improvement over other Amstrad machines, with the exception of the PPC, upon which it seems to be based. Again, the word to describe it is usable.

The overall speed of the machine is let down by slow hard drive access times; boot-ups take a long time and disk-intensive applications will be noticeably slow.

Amstrad launched the CPC range with a full compliment of peripherals that at the time, couldn't be matched for price. The PCW, released with a screen, printer and software in one easy to use package, filled a market gap and sold well. The PC range put computing power previously confined to business persons, into the hands of the masses and became very popular, opening up a whole new market for PCs in home computing. The PC2286 doesn't open any doors, neither does it break down any pricing structures.

Plenty of other manufacturers are releasing 286-based machines, offering better drives and better specifications for the same – or less – money. This is a nice little machine, but at the price, Amstrad will have a battle on its hands to win your support.

The figures behind the machine

How does the Amstrad machine compare in terms of speed, performance and ability? Is it worth upgrading your existing system in order to make use of the extra power of a 286? Check out our definitive benchmarks to see whether or not the Amstrad PC2286 brings home the bacon. In order to provide comparison, all tests are shown relative to an Opus IV XT turbo with EGA screen and 20Mb hard drive.

The Amstrad PC2286 has the following specifications:

1Mb of RAM
64K of Cache RAM
80286 central processor running at 12.5MHz
1 3.5 inch floppy drive offering 1.44Mb of storage capacity
40Mb Hard drive
VGA graphics adapter supporting EGA, CGA, MDA and Hercules
MS-DOS 4.01 operating system

Running the Spectrum CPU speed test version 1.10 from the sbc-Spectrum Group PLC, the Amstrad PC2286 performs like an IBM AT running at 9.8MHz and with a performance 5.2 times that of a standard IBM PC or XT. By contrast, the Opus performs like an IBM AT running at 4MHz and with performance twice as fast as a standard IBM PC/XT.

With the CORE Disk Performance Test Program version 2.7 from CORE International Inc, the drive of the Amstrad machine has a data transfer rate of 260.2 KB/sec. The average seek time of the drive is 100.2ms with a track to track seek time 1 ms. The performance index rating was 2.098. The Opus running the same CORE disk test has a data transfer rate of 120.5 KB/sec, an average seek time of 68.5 ms and a track to track seek time of 15 ms. The performance index rated 1.520.

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Not to be STOSsed aside lightly

You've got less than a month to get your STOS-created games to Mandarin Software if you want to be eligible for the STOS Gameswriter of the Year competition. Anyone with STOS should seriously consider entering the competition – which requires you to write a game of your choice (if you hadn't worked that out yet) – as the top prize is advance royalties of £5,000. Oh, and you'll also get your game published by Mandarin.

The winning entry will be announced at the Atari show (which starts on the 23rd of June and ends on the 25th). The show will be held at the Alexandra Palace in London. You'd better get down to some serious programming if you're thinking of entering.

Mandarin has already selected four games that it considers to be the best so far. These include Sky Strike in which the idea is to destroy aircraft and battleships; Battle Command where you have to protect cities from invading aliens (can't think where I've heard that scenario before); Mouth Trap where the idea is to move around the screen eating fruit and collecting bonuses while avoiding the nasties; Arthur of the Britons in which you must compete in various tournaments. Now you know what you're up against. The place to send your games is Mandarin Software, Europa House, Adlington Park, Adlington, Macclesfield, SK10 4NP.

On the subject of STOS, Mandarin has just released the STOS Compile, reivewed in this issue of *Express*. This £19.95 package lets you create stand-alone (or machine code) programs from STOS BASIC. The resulting files can be run from the Desktop. An updated version of the STOS system files, V2.4, is included with the Compiler.

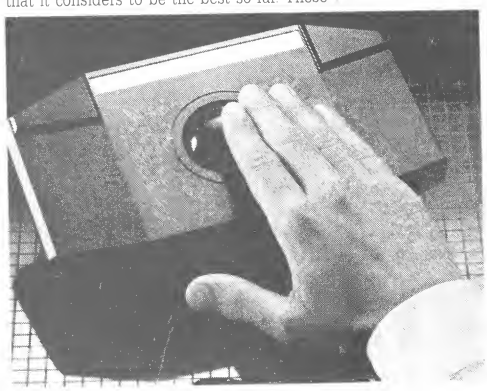
On average compiled programs run 50% faster – that's not a great deal, but then, say Mandarin, the STOS sprite and graphic routines are highly optimised. Loops like WHILE WEND and REPEAT UNTIL can run up to 10 times faster.

Compiled programs also tend to be frightfully large; between 40K and 80K larger than source files. A three-line program that consisted of a FOR NEXT loop and a PRINT instruction compiled to a 51K file. Not exactly efficient. The same three-liner compiled with HiSoft's Power BASIC produced a PRG file five times smaller.

All Mandarin software is available from Database Direct, freepost, Ellesmere Port, South Wiral, L65 3EB (051 3572961).

Hard drive toolkit

Microdeal is now distributing Michton's Hard Drive Turbo Kit. The £29.95 package provides ST hard drive users with utilities for d and backing up data onto floppy.



● New trak-ball for Atari. Can you throw away your mouse?

The more you use your hard drive, the more it seems to slow down. It's not old age, but something caused by file fragmentation. You'll probably erase and save numerous files in the course of your hard drive's life. Files saved during that time won't be saved contiguously, but wherever there's free space (which is usually a bit here and a bit there).

While Turbo Kit won't return your hard drive to the speed of its youth, it will do the next best thing. It will rewrite files into contiguous blocks while moving all free space into one large block. Your drive will operate much better and will run at optimum speed – although you'll need to use the utility every week or so to keep everything contiguous.

It can take 20 minutes or more to set your hard drive right if files are badly fragmented. This does depend greatly on how much is stored on the disk and just how much data the disk holds.

The cache can enhance the performance of your ST as well as increase the performance of your hard drive. All recently accessed disk sectors are held in the cache – in much the same way that a RAM disk would store complete files. The cache eliminates the disk search-and-access time needed to reload old information.

Microdeal is at PO Box 68 St Austell, Cornwall PL25 4YB (0726 68020).

Mouse alternative

Hard Edge Communications on 0742 665719 has come up with an interesting alternative to the mouse. It's an upside down mouse – or rather a trackerball.

The Atari Trak-Ball has been suitably modified to work with the ST. It can be used either as a substitute for the mouse or as a joystick – a switch at the back of the device lets you determine how the trackerball should act.

Trak-Ball costs £28.99.

Adrion McHerriot

Not another!

After raving about Tempest's decision to introduce a low cost hard drive (issue 21), I've recently been informed about CST's activities. For some months CST has been selling a £299 20Mbyte hard drive. The price – incidentally – includes VAT.

The drive doesn't have a real-time clock or auto booting facilities, but at the price there's no complaining. Various models up to 150Mbytes capacity are available. Prices obviously rocket the closer you get to 150Mbytes. The 40Mbyte drive, for instance, goes for £399.

Said CST's Martin Dolney, "provision for auto booting will be made available in a month or so. Upgrading should add little more than £30 to the price." Further information from CST at The Shaftsbury Centre, Percy Street, Swindon, Wiltshire (0793 481333).

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PC UPDATE

Rare bugs

One of the most interesting aspects of the recent 'Bug Shocker Hits Amstrad' story was the nature of the bug. If you read Express's news item (issue 23), you'll remember that the supposed hardware error occurred when pieces of data separated by exactly 32Mb were accessed in close succession. You can well imagine how a fault of this type would look suspiciously like a hard disk error.

Once it was traced to MS-DOS 4.01, the operating system, it needed only a change of two bytes to cure the problem. That change has been made with Microsoft's approval, and presumably incorporated into their own copies of the program. It's still not known whether IBM's PC-DOS, a variant of the Microsoft product, has suffered the same problem, and surprise, surprise, IBM aren't saying.

The main point of this little item, though, is how obscure some bugs can be. It's all very well the end user climbing on a Shire horse and bending the supplier's ear til it looks like something off the Big Friendly Giant. What is often forgotten is that there's only a finite time available for testing any program and some bugs will inevitably only be found after serious 'real world' use once, the products have been released. The bug found in DOS 4 was never going to show until there were at least 32Mb of data on a hard disk, and be highly unrepeatable, making it very hard to trace even if it did occur.

While pleading for a reasonable approach, I can draw on my own experience in compiling and supporting the *PC Plus SuperDisk*. A number of the calls I get each month are from people who are running the software on non-Amstrad, non-IBM machines. Of course there's nothing wrong with this, and the vast majority of programs run on all PC compatible machines. What is hard to take is the disgruntled complaints of some readers about our lack of checking. There must be well over 200 different ready-made PCs on the market, plus any number of combinations of expansion card, monitor and printer. It should be obvious to all reasonable people that it's not possible to test programs on every configuration of machine. It's also very hard to analyse inconsistencies in a particular ROM BIOS over the phone!

Printing while you work

Did you realise your bog-standard, simple PC can multitask? It's a bit limited, of course, but you can print out a document while working on something completely different. All you use is the MS-DOS PRINT command. This command takes a named file and send it to the printer, as a background task. You can control the timeslice (the proportion of time DOS devotes to printing) and set up a queue of documents. The following example:

```
PRINT jeriboa.rat
```

starts printing the file jeriboa.rat on the default printer (attached to LPT1:). To add the file mole.rat to the queue, you would type:

```
PRINT mole.rat /p
```

and to remove it from the queue, even if it isn't the last name, you'd type:

```
PRINT mole.rat /c
```

Comms, I hate 'em

Mention the idea of computer communications to PC users and you'll either receive a stream of protocols, BBS numbers and Telecom Gold baud rates, or a stream of invective. I claim affinity to the latter group and had this dislike strengthened over the weekend, while trying to get a data file transferred from an XT to an Amstrad CPC6128 (he says, squeezing another clove of garlic over his crucifix).

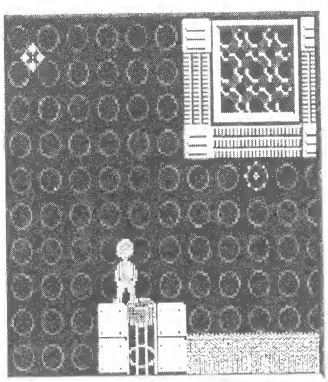
It has to be said that most of the problems turned out to be with the CPC. I connected the external serial port to the COM 1 port and ran *Telix* on the PC – *Telix* is a very natty bit of shareware with many of the best features of *Procomm* and *Baudwalk*. On the CPC end I had the Amstrad SETSIO program and CP/M's PIP. I guess this is a bit hard on the Amster, really, as a good comms utility could probably have saved a lot of heartache. Anyway, I set the link slow, to 1200 baud, as there were no mutually compatible protocols available. *Telix* supports Xmodem, Ymodem, relaxed Xmodem (Californian version?), Modem7 and Kermit among others, but the serial port manual on the Amster just talked about a 'special transfer protocol' – apparently none of these.

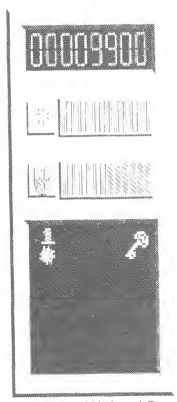
PIP kept giving an ERROR – CLOSE FILE message at the end of transferring my 33K file, and left me with nothing on the CPC disk. I cut down the file into ever smaller chunks and transferred each bit in turn to the CPC, but even then there was 4K-5K that refused to go across. After a lot of faffing around, it turned out to be bad sectors on the 3" disk! Yet another example of the ninth law of computing 'It's easy to be fooled – think laterally'.

Simon Williams

Prize Quiz

Perhaps some of you have seen the game pictured here. It runs on an EGA screen and is an animated adventure game of the Jet Set Willy ilk, though rather better. All you have to do is name it and send the answer on a postcard to May Day Game, PC Update, New Computer Express, 4 Queen Street, Bath BA1 1EJ. As the address suggests, you've got to be quick off the mark and get your answer in by May 1st. First out of the hat wins a copy of the game.





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AMIGA BLITZ

Amiga Helps Solve Lockerbie Disaster

The Amiga 2000 certainly is proving itself to be a force to be reckoned with within the world of graphic workstations. Dumfries and Galloway Police have just installed an Amiga 2000 based computer system to aid the investigation into last December's Lockerbie air disaster.

The system is being used to process the many hundreds of hours of videotape footage taken during the aftermath of the disaster. The Amiga 2000's advanced graphic capabilities are employed to reconstruct the site of the crash so that Police can establish exactly what happened immediately before the incident.

Police experts are also using the Amiga to produce stills from videotape using a digital framestore. These captured frames are then enhanced by the Amiga prior to be printed out to a polaroid film recorder.

"The Amiga 2000 system gives us the potential for crime detection by using its excellent graphics and its ability to grab video images so that we can output them as photographs and slides.", says Seargent Bob Ovens of the Dumfries and Galloway Police force.

Demos Update

The demos scene has always been one of the most active and exciting aspects of the Amiga. With the machines audio-visually advanced hardware, demo writers have understandably been having a field day exploring the possibilities of the Amiga.

The latest, and most definitely one of the greatest demos to appear on the Amiga is a very stylish animation of the famous scene in the original Star Trek movie where the Starship Enterprise moves slowly out of the dry dock that orbits the Earth. The animation was produced using VideoScape 3D and really is a worthy tribute to the Amiga's animation capabilities.

"What do I need and where can I buy it?", I hear you shout. Well, firstly you'll need at least a one megabyte Amiga to run it and the demo itself can be obtained from 17Bit Software. This demo is a definite must for all decerning Amiga demo collectors. 17Bit can be contacted on 0924 366982.

Multi-Megs for Mini-bucks

Why is it that the price of hard drives on the Amiga is so high? The average price of an Amiga compatible drive has, until recently, been almost four times that of similar capacity drives on a PC; an unacceptable situation indeed!. Thankfully, things are starting to change with the news that several manufacturers are planning to release cheap hard drives for our beloved machine.

The most interesting hard drive comes from a company that has been taking the Amiga market by storm over the past six months or so. I'm talking about Applied Systems and Peripherals, manufacturers of the popular budget genlock, MiniGen. Their unit, the AmDrive, is a 40 Meg device for the A500 and will be sold at an exceptionally low price of £399.

The drive currently does not support autobooting under Kickstart 1.3, but plans are underway to release a £50 upgrade which will be available to all Amdrive owners. What if you haven't got Kickstart 1.3? ASAP have thought of that too; just send your AmDrive and A500 back to ASAP with a cheque for £75 and they will upgrade both your AmDrive and A500.

Plans are afoot to release a version of the Amdrive for the A2000 which will support autobooting as standard. The device will consist of a plug in card which will slot inside the A2000 and will have both the same specification and price as the A500 version.

I've been using a pre-production Amdrive on my A500 at work for the past couple of weeks now and I can whole heartedly recommend the unit. If you're in the market for a high quality, low cost hard disk for your Amiga, look no further than ASAP's Amdrive – and they can quote me on that! ASAP can be contacted on 0724 280222.

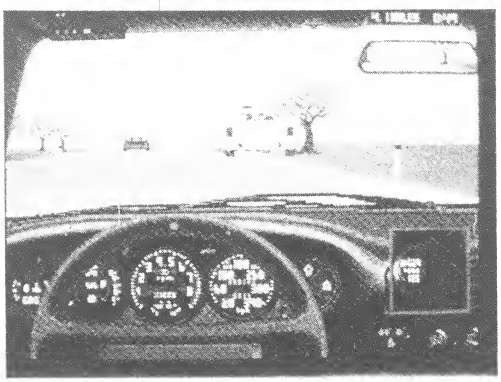
Games News

Fans of Accolade's classic Test Drive will be pleased to learn that the follow-up, Test Drive 2: The Duel, has just been released. The game sees you racing head to head against the computer across the United States in either a Porsche 959 or a Ferrari F40.

The game plays alot better than the original and optional car and scenery disks are available to further enhance your dreams of driving some of the worlds greatest production cars.

● Since the release of Defender of the Crown, CinemaWare have managed to establish themselves as one of the top games producers on the Amiga. Their next release, after the high acclaimed Lords of the Rising Sun is called It Came From the Desert which is modelled upon those brilliantly awful 1950's 'Big Bug' movies. The game is CinemaWare's biggest project yet (they seem to say that about all their games!) and promises to feature their usual high standard in graphics and sound. 'It Came From the Desert' is due for release in July.

● Look out for Xenon II from the Bitmap Brothers coming soon to an Amiga near you. From what I've been lucky enough to see, the follow up looks set to be a very hot product indeed. Imagine a game that has fast parallax graphics, more objects on screen than you'd expect, a thumbing Bomb the Bass soundtrack and the same addictive gameplay that made the original such a smash hit.



● The Duel; follow up to the highly acclaimed Test Drive from Accolade.

Jason Holborn

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SPEX

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How could I possibly resist an advert in Express claiming to sell Unique Spectrum Software? This is a welcome sight to a jaded journo who's seen so many coin-op conversions and games-of-the-books-of-the-films-of-the-small-bendy-plastic-toys that he has nightmares about ™s and ©1989s. Usually in adverts for computer software where it says 'unique' you know what they really mean is 'No one's been desperate enough to do it before'. Not the case here I can assure you. The four programs written and sold by John Lewis are definitely a bit different to say the least. The two I had a look at were Dogtrack and Subliminal Suggestion and the effects of the latter still haven't worn off. Dogtrack is a sort of Professional Greyhound Simulator which lets you gamble on some rather, er, abstract looking greyhounds and lose practically every time. probably of even more interest to all you Greyhound racers out there is the built-in form analyser which simulates races on a variety of different tracks and attempts to guess how well the favourite, underdog (groan) etc. would get on. I'm not sure I'd take a racing tip from it but there"s potential there. much better than this though is 'Subliminal Suggestion'. This is a wonderfully wacky little number which is supposed to affect you mental make-up with some pretty patterns and flashing subliminal messages! The kind of thing Jeff Minter would get into in a big way if the poor sap owned a Spectrum. This potential psychiatrist unemployer claims to be able to do the following – boost confidence, relieve stress, increase happiness and make you stop smoking, cut down drinking and lose weight! (The author was obviously targeting computer journalists with the last three). Id recommend you use it in a darkened room, wearing flares and listening to Pink Floyd. The subliminal messages are great. Things like 'You will feel confident' and 'Eat lightly' flash on the screen. Does it work? I'm not sure, I'll have to have a go on the Decisiveness increaser before answering. Both programs are recommended. They're written by an enthusiast and as far as I know genuinely unique. John Lewis' other work includes a Pools analyser with form input and I Ching (more mystical fulfilment, no doubt). Prices are £4.99 for any two on one tape. Contact John Lewis, 157 Hamilton Avenue, Tulworth, Surrey. Oh yeah, remember to tell your family exactly what you're doing in that darkened room wan't you. We don|t want them getting the wrong end of stick.

Rubberwear plus

If you're a rubber key person who's beginning to find that your rubber keys are a bit rubbery and characters take a long time to appear on screen so you have to type v e r y s l o w l y here's a tip. Get hold of a new membrane. This is a rubber mat thingy that's ever so easy to fit.I put one in my aged 48K and it's a new computer. Membranes are available from most good repair/ spares outlets and probably a few bad ones as well.

Scroll on

I received a small, well-informed little listing this week. The fairly youthful 14 year old author Mark Bailey will go on to big things. I know it. The program puts a scrolling message at the bottom of the screen and is easily incorporated into your own masterpieces. Here it goes:

```
10 CLEAR 59989: FOR A=59990 TO
60082: READ M: POKE A,M: NEXT
A
20 DATA 58, 196, 234, 60, 50,
196, 234, 254, 8, 32, 47, 62,
0, 50, 196, 234, 42, 194, 234,
35, 34, 194, 234, 42, 194, 234,
34, 126, 255, 255, 32, 8, 33,
197, 234, 34, 194, 234, 24,
240, 33, 0, 111, 41, 41, 41,
237, 75, 54, 92, 9, 1, 8, 0,
17, 186, 234, 237, 176, 17,
186, 234, 33, 255, 80, 6, 8,
197, 6, 32, 24, 13
30 DATA 203, 22, 43, 16, 251,
1, 32, 1, 9, 193, 16, 239,
201, 229, 235, 203, 22, 235,
19, 225, 24, 234
40 DATA "Written by M Bailey  "
(that's three spaces after the 'Bailey')
130 RESTORE 40: READ A$: LET
X=0: FOR I=60101 TO 60100+LEN
A$: LET X=X+1: POKE I, CODE
A$(X): NEXT I
140 POKE 60101+X,255: POKE
60094,134: POKE 60095,234:
POKE 60102,
150 RANDOMIZE USR 59990: GOTO
150
```

Hope that wasn't too painful. Insert your message in the DATA statement in line 140. Save the whole thing by typing SAVE "SCROLLER" CODE 59990,111+(no. of characters in your message). Incorporate it into your own program and type RANDOMIZE USR 59990 to run. Thank you, Mark Bailey! (Remember me when you write your first mega game).

Being mercenary

Here's this week's plea for help department. M Green has written requesting help in Mercenary – The Second City. Believe it or not, and given my track record I go for not, I went pretty far in the original Mercenary game. This update version, however, I am not acquainted with. What M wants to know is how to get through the triangular doors. Help a fellow Spectrum owner and write without delay. Hints and tips on this game, and any others of course, will also be gratefully received. Send them to SPEX, New Computer Express, 4 Queen St Bath BA1 1EJ.

Robin Alway

PD peeve

A query brought up in the Express letter pages a few weeks back has been bugging me for a long time. Why has the Spectru m got so little Public Domain Software? Before the +£ I suppose it was understandable; duplicating tapes successfuly on a smallish scale isn't easy, but now that we have that beloved disk based machine there's no excuse. PD software is good for lots of reasons. The fact that its free or very cheap is the first. As mentioned in the letters page in question, some PD stuff is available fro m Chezron Software, 605 Loughborough Rd, Birstall Leicester LE4 4NJ for £3.50 disk, £5 two microdirve cartridges or £2.75 on cassette. A trial copy of any format can be had for £2.

SECTOR 64 SECTOR

Scroll the c redits

This week we think we've come up with a listing that you will find handy in any program you are writing – it's a definable line screen scroller.

You as the programmer in BASIC or machine code can ask the routine to scroll any line on the screen from right to left. All you have to do is tell location 49153 what line number from 0-24 you want.

```
0 B=49152: FORL=0TO 78: READA:
POKEB+I,A: NEXTl
10 DATA 169,1,170,189,29
20 DATA 192, 133, 254, 189, 54
30 DATA 192, 133, 255,160, 0
40 DATA 200, 177, 254, 136, 145
50 DATA 254, 200, 192, 39, 208
60 DATA 245, 96, 96, 96, 0
70 DATA 40, 80, 120, 160, 200
80 DATA 240, 24, 64, 104, 144
90 DATA 184, 224, 8, 48, 88
100 DATA 128, 168, 208, 248, 32
110 DATA 72, 112, 152, 192, 4
120 DATA 4, 4, 4, 4, 4
130 DATA 4, 5, 5, 5, 5
140 DATA 5, 5, 6, 6, 6
150 DATA 6, 6, 6, 6, 7
160 DATA 7, 7, 7, 7
170 REM THIS IS YOUR BIT
190 C=INT (RND(1)*25)
200 POKE 49153, C:SYS49152
210 GOTO190
```

For example, if you want to scroll the top line you would do this:

```
170 POKE 49153,0: SYS49152: GOTC
170
```

Or if you wanted to scroll the top and the bottom lines only you would do:

```
170 POKE 49153, O: SYS49 152:
POKE49153,24: SYS49152: GOTO 170
```

Cool eh! Anything past line number 170 is completely yours to do as you wish. Remember any listings you may want written just write to the usual address.
Section 64,4 Queens Street, Bath, BA1 1EJ.

The show's over

Two weeks ago we attended a computer game show down in our home town of Basildon in Essex, but before you go *why didn't you tell us*, you didn't miss much.

It was a bit of a disappointment actually. The thing that really surprised us was the hall was quite small – you could walk around it in about 5 minutes– but they were charging at least £3 for children and £4 for adults!

A lot of the stall holders did terrible trade and some even left on the beginning of the third day, but not all the stall holders seemed to do that bad. Computerama from Southend took over three stands in the course of the sho; they seemed quite pleased with the trade they took.

But it wasn't all doom and gloom. The 16-bit wizards, The Bitmap Brothers, came down to see us, and all we can say is, if there any ST or Amiga reading (come on, we know you've got that C64 in your bedroom) Xenon II lots framed to be a hit. We're sure whoever does the 64 version will make it just as cool (hint)!

But the show didn't end there as our hectic weekend still hadn't finished. Mic was rushed up to Reading half way through the show to sort some bugs in "Street 'Cred' Boxing" (Soon to be released under the new players label Premier, you'll be sorry if you miss it).

Then there was Sunday a pretty normal day. Exactly what you should expect on a computer game show down in Basildon, so if you are the type who rushes out and jumps at the opportunity of a computer show (like us) then wait till the Commodore show in June (we'll be there).

Help

Recently our Amiga and CBM 128 blew up. Every time we send them off they take about 4 weeks to come back, and then the cost is very high, so if there's anyone out there who does fast cheap computer repairs, we'd like to hear from you.

You never know, you may even get a free plug.

Cheats start here...

Gary Gould has some more cheats for us (what a mega star!).

This week's cheat is for the Munsters from Again Again. Load a game as normal, once loaded reset machine then:

```
POKE 2048, 216: POKE 2049, 120: POKE
2050, 32
POKE 15593, 169 (lots of energy)
POKE 15614, 169 (lots of spells)
SYS 2048 (To start the game)
```

Looking ahead

Coming out very shortly is the release of four new games from Premier, the new budget lael from Players.

Players' Premier new releases promise chart busters like *Street Cred Football*, a five a side street crazy football game, *Task Force*, which is a flip screen arcade blast em with loadsa fire power, and *Street Cred Boxing* the complete Street boxing simulation.

With the first batch of premier games is *Subway Vigilante* where you take the scene as a guardian angel trying to clear the subways from scum.

Prices:

Street Cred Football	£2.99 Premier
Street Cred Boxing	£2.99 Premier
Task Force	£2.99 Premier
Subway Vigilante	£2.99 premier

French software house Titus is releasing its Crazy Cars 2 on the 64 shortly. Crazy Cars 2 is similar to Crazy Cars except it features split roads and police chases.

Let's hope it has a nice road routine, unlike the Amiga and ST's in Crazy Cars l.

Ian + Mic

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PCW PATCH

Class of Z88

Anyone about to buy a Z88 at the new cheapo prices (£250 for Z88, four batteries, mains adapter, carry case and RAM pack) faces the problem of transferring files to and from their PCW. You need a serial/ parallel interface and connecting cables, and Software Diffusion on 01-376 8038 will sell you them.

The interface is a standard RS232 (which also lets you hook up external printers, modems and so on) which includes a battery-backed clock which keeps the correct time, allowing you date-stamp your files – £59.95. The cables link the Z88 and the PCW and come with transfer software written by CPort to convert LocoScript files to and from PipeDream format – £29.95.

If you're doing things to a budget you can try getting your local computer shop to make up a cable (bring along the Z88 manual which has a pinout diagram in the Appendix). Should cost about £15. Transfers can be done with PIP – details next week...

Disk diskovery

Recently there has been speculation that Amstrad were cornering the market in three inch disks. Latest news is is that they have managed to import a million three inch disks from the 'Far East' (well, that narrows it down to a third of the World's population) so the current shortages should be relieved. Backlogs may take a few weeks to clear though, but prices will stay the same for the foreseeable future.

STOP right there

Actions in LocoScript can be suspended or stopped by pressing the [STOP] key (had Locomotive followed usual computing conventions it would have been [SHIFT]-[EXIT]-W-up-arrow-Q). Useful to remember that if you, for example, delete a block you've marked instead of pasting it, or scroll to the end of a 150k document instead of back to the beginning (with the consequent twenty minute wait). Any key again resumes the operation, [STOP] again stops permanently.

Aargh! It's... The Saurus...

Roget's word list (Thesaurus Rex) hasn't made it to the PCW yet (so Neil Kinnock can't use it for his speeches yet). Mini Office promises to have one out soon, but there's another on the market. The Three Inch Thesaurus is available from 01-829 9219 (doesn't work on 8256s).

Essentially LocoFile data to be used from LocoScript 2 with LocoFile, it doesn't really replace the book original but if you're determined to have a paperless office it might be worth checking out for £14.95.

Join the IQ

Anyone have details on the research done in Ottawa which linked IQ scores with the speed at which people could tell which of two lines on a computer screen was the longer? (The less time the lines were flashed on screen and you can still see which is longer, the higher your IQ). Would make a nice little BASIC program; details to me care of *Express*...

Basil Pigg

QL corner

Quill Document size

One characteristic of Quill that isn't made clear in the documentation is that the maximum size of a document is limited mostly by the number of paragraphs.

Each time you press the enter key, you get a new paragraph, so a relatively small document consisting of lots of single lines could quickly cause Quill to run out of space.

QL-PC transfer via Serial Port (Part 2)

Assuming you have made up the lead as described in the previous issue of *Express*, you plug the QL end (telephone jack) into SER2, and the other end (DB-25 socket) into COM1 on your PC.

Switch both machines on (and boot the PC i the usual way with a DOS disk. Type the following statements into the QL:

```
BAUD 1200:OPEN £3,SER2SIZ:COPY
CON,SER2SIZ
```

and the following into the PC:

```
MODE COM1:1200,n,8
COPY COM! CON
```

If you now type a few characters on the QL keyboard, and then press control Z, you should see the characters displayed on the PC screen, thus demonstrating that the QL is 'talking' to the PC.

Now, press control C on the PC, and shift break on the QL (they are both stuck in a loop) and type the following on the PC:

```
COPY COM1 <file name>
```

and

```
COPY <file name> SER2SIZ
```

on the QL.

When the Microdrive disk activity on the QL has stopped, the PC should respond to the end of file character by displaying "1 File(s) copied" followed by the DOS prompt. If the PC just hangs, press Shift Break on the QL, type COPY CON SER2SIZ and press Control Z. This sends a Control Z (end of file) code to the PC, closing the file, and giving the DOS prompt.

Copy the file to the screen on the PC (use TYPE <file name>) to check that the file has been transferred. Using a 1200 baud transfer rate minimises the chances of losing parts of the file while the PC is writing to the disk.

Try using a faster transfer rate (it has to be the same for both machines, of course) with the destination file in RAM, on the PC.

MicroEMACS - A Totallly Free Text Editor

The public domain programmer's text editor, MicroEMACS, has been ported to the QL by a QUANTA member, and is now available free, gratis and for nothing from the QUANTA software library.

Although it is not particularly easy to use (some of the key combinations are rather counter-intuitive) it is extremely powerful, and is also available for all the popular micros (PC, Amiga, ST).

John Torofex

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Acorny story

The Cuckoo cuckoo's, Doves coo, and the scent of litigation perfumes the air.

Yes Spring has sprung, and so we get not one, but two different lots of acrimony. First off we have software house LTS complaining bitterly about an 'inaccurate' press release from Acorn. It appears that Acorn stole the credit for the DTP software used by some schoolchildren in an episode of the Software show. Acorn have replied by issuing a revamped press release, but no apology. LTS are not happy about this, nor about the DTI either if you read their press releases.

You can't pull the wool over my eyes though, and I reckon it's all just a stunt to gain some publicity for some otherwise dull-as-ditchwater programs. Trying to get education authorities to shell out sixty odd quid for a piece of BBC software is just like flogging a dead horse, it won't get you far.

Fishy story

Minerva are a different kettle of fish however. Well known for their threats to BBC magazines in the past, they are currently leaning hard on a Methodist minister of all people. All this poor unfortunate has done is to crack the copy protection on two of Minerva's programs.

Perhaps Minerva are worried that more people might find out what's inside their programs! I can't say I've been impressed by Minerva's offerings up till now. Certainly, I remember their School Administrator package which had documentation which might as well have been written in hieroglyphics. Sigmasheet, billed as the worlds biggest spreadsheet, is also ludicrously slow in use.

It's not all bad though, as they have at last started to DTP their manuals (phew!) so at least you can now read them, instead of getting eyestrain.

Mail supremacy?

Getting software by mail order is often the only way to get exactly what you want. So it comes as a great disappointment to find that the Post Office treats disks with cavalier abandon.

Only yesterday I had a 3.5inch disk returned with the corner almost broken off. Of course the envelope had DO NOT BEND written on it in red. This is obviously not an ideal situation, but unfortunately there doesn't really seem to be any alternative.

What I do suggest though is to contact the Post Office, and complain bitterly if they foul up. Eventually they might take notice, if enough of us make our opinions known. They could so easily introduce a special tariff for delicate objects, and separate pick-up and delivery points.

The things people say

Had an interesting letter from Mr W of Horsham who accidentally left his BBC B outside in a snowstorm last week. Getting it inside it wouldn't work, surprise surprise.

Writing it off, he gave it to a next door neighbour's young son to play with. Next morning the boy came in, smiling. 'Thanks for the computer,' he said. 'I changed the plug and it's working fine'.

Andrew Brown

MSX TRX

2's company

Good news this week for those of you who'd like to upgrade to an MSX 2 computer, but can't find a supplier of the MSX2s with the built in disk drive.

A new computer retailer is hoping to be trading from mid June, and he has already found stocks of the Philips 8235 and 8250 computers. At the moment the persons involved in this venture are looking for premises in the Spalding area, and are hoping not only to be supplying MSX hardware and software, but will also be involved in the retailing of the Sega games console and software.

Orders are already being taken for the MSX 2 computers, although a £50 deposit is required on each order. Other items of MSX hardware will soon be available, e.g. modems, printers and disk drives.

For more details and prices of the MSX 2 computers –promised to be at reasonable prices – phone David Webb on 0775 711109.

It'll slay you

I've had a real bash at Gremlin Graphics' latest MSX release, Hercules, Slayer of the Damned. Boy, is it tough!

In this game Hercules has to compete twelve labours. You tussle with skeletons while trying to collect your labours, which are in puffs of smoke, and fight off a thieveing spider which tries to steal the labours you've collected. You eventually get the chance to fight the Minotaur, an even tougher task.

This game is a real arm archer, and difficult enough to hold your attention for quite a while.

Graphics are pretty good, monochrome figures set against a colourful backdrop. Joystick response is pretty good too. In many respects the game reminds me of Way of the Tiger, and is none the worse for that. All in all one of Gremlin's better efforts.

FAST talking

There's a lot of talk these days about FAST, the Federation Against Software Theft. Their campaign focuses on the fact that computer programmers are losing revenue due to copying, but I think that more importantly that for machine with a relatively small user base like the MSX, piracy means lower sales, and software houses then sell too few copies this making conversion to MSX an unviable proposition.

For example, Gremlin Graphics have greatly reduced the number of MSX titles released, and it appears that Navy Moves by Spanish Software house Dinamic is *not* going to be distributed in the UK due to poor sales of their previous titles such as Game OVer and ARmy Moves.

This is a pity as Navy Moves looks as if it would be better than any of the previous releases. I urge MSX users not to copy such games as Image Works' Blasteroids and Ocean's Robocop, to buy them and show these companies that MSX titles will sell in the UK.

Mazeing

Caroline Kyle from Ayrshire asks me if I know how to collect the cross in World 10 of Maze of Galious.

I'm afraid I don't know – I see so many games I never get to finish any of them! Anyone able to help Caroline?

Keith Neal

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CPC centre

RAM lets RIP

One of the most important suppliers of hardware and software for the CPC, RAM Electronics, has folded.

RAM was the producer of such standards as the RAM Music Machine and the DK'tronics range and their absence will be sorely felt in a market that's increasingly dominated by specialists.

That's the bad news. Never one to spoil your evening, however, *New Computer Express* can reveal exclusively that Datel has bought up RAM's CPC interest lock, stock and barrel. Production of the entire catalogue should have recommenced by the time you read this, and judging by the noises Datel is making we may be in for a Renaissance or Indian Summer, depending on how you like your metaphors.

"Nothing's going to go up in price," boss Mike Connors assured me, "and indeed we may even be able to bring some prices down." Why suddenly get involved with the CPC now, I wondered? "Well, there doesn't seem to be any doubt that there's a revival going on at the moment," Connors said, "and we want to be a part of it." Good for him, and good for us too.

RAM Electronics has not been well for some time, and if it hadn't been rescued there's no reason to suppose it could have survived. Datel's intervention – like Database's recently in taking over the AMS range – can only be good for all concerned.

Datel is on 0782 744324.

The Ankhs are back!

For my money Incentive's Freescape trilogy, Driller, Dark Side and most recently Total Eclipse rank among the very best games ever released. The much vaunted 3D environment is crucial in enabling one to suspend disbelief, of course: but that's only part of it. There's enough for you to do when you first load each of these games to keep you entertained and hooked long enough to begin to see what's required to advance further. And there is always the suggestion that there's more to do than you've already discovered: familiar territory conceals unseen clues and dangers.

Total Eclipse has continued Incentive's determination to continue striving to squeeze more out of Freescape and fit even more into the Amstrad's very limited memory. It feels faster and it has one advantage over its two predecessors: it's set on earth. Admittedly it's Egypt early this century – very Indiana Jones! – and I suspect one reason for that is that both desert sand and pyramid, with flat, monocrome surfaces, fit Freescape's abilities down to the ground. Whatever the reason, it's my favourite of the three games released so far. (What I hated/loved most, by the way, was on that 'swings and roundabouts' walkway where you have to get in exactly the right position before it swivels – or else!)

And now there's a sequel. Called Sphinx Jinx it's very much in the spirit of Total Eclipse, though if anything it seems at first sight even tougher.

Rather like a puzzle from Freescape itself, though, what you have to work out is how to get your hands on it. Because it's only available through the Home Computer Club, and even then only as part of a double pack that includes Total Eclipse. Now to be perfectly frank, much as I love the game I can't honestly claim it's big enough to be worth splashing out virtually full-price for on its own – though if you haven't experienced Freescape yet, or haven't got around to Total Eclipse, it's definitely time you did.

I suppose there's a vague possibility Sphinx Jinx may eventually become available on its own or elsewhere. But I wouldn't bet on that happening for at least six months.

Sphinx Jinx is available from the Home Computer Club at £11.20 (disk, with Total Eclipse on the other side). Write to The Home Computer Club, Swindon, SN3 4BR for details. You'll need to join the Club, which involves buying a program every couple of months for at least a year.

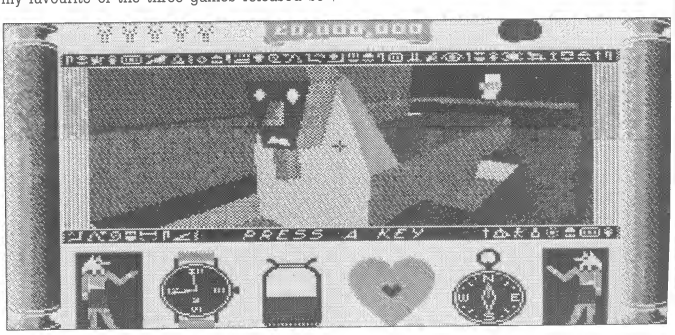
PS Freescape fans won't want to miss the June issue of Amstrad Action, out now, which has five pages of hints, tips, cheats, pokes and maps for Driller, Dark Side and Total Eclipse. Nothing on Sphinx Jinx yet though – give us time!

Steve Carey

Na-na na-na, na-na na-na Batman!

Pete Hopkins wrote to me last week asking if I knew of any infinite lives pokes for Ocean's arcade adventure. Eventually I managed to track one down by Neil MacDougall – hope you don't mind helping out a fellow fan, Neil!

```
1 ' Batman - disk
2 ' by Neil MacDougall
3 ' NCE 13/5/89
1Ø MODE 1:PAPER Ø:INK Ø,Ø
2Ø BORDER Ø:INK 1,6
3Ø INK 2,2Ø:INK 3,26
4Ø LOAD"bat3.scn",&cØØØ
5Ø FOR x=&bfØØ TO &bf2d
6Ø READ s$
7Ø POKE x,VAL("&"+s$)
8Ø NEXT
9Ø CALL &bfØØ18Ø END
1ØØ DATA Øe,Ø7,11,4Ø,ØØ,21
11Ø DATA ff,bØ,cd,ce,bc,21
12Ø DATA 27,bf,11,ØØ,Ø1,Ø6
13Ø DATA Ø6,cd,77,bc,21,ØØ
14Ø DATA Ø1,cd,83,bc,cd,7a
15Ø DATA bc,21,9Ø,1c,36,ØØ
16Ø DATA c3,ØØ,Ø1,62,6d,2e
17Ø DATA 73,62,66,ØØ,ØØ,ØØ
```



● Walk like an Egyptian again with the sequel to Total Eclipse

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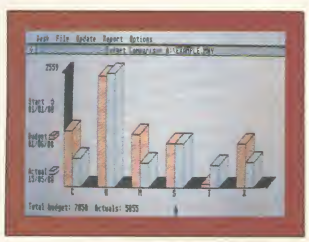
MAIN ACCOUNT SCREEN



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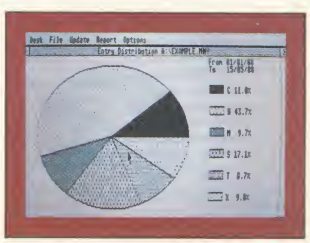
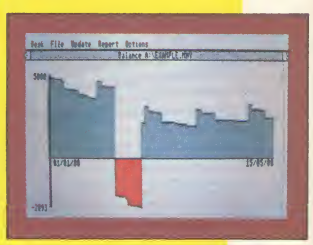


PIE CHART SHOWING SELECTED ENTRIES OVER CHOSEN DATES



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TIPS

computer I have been looking in almost every magazine to see if I could find one advertised. This has proved unsuccessful. I would be grateful if you could send me details as to where I can acquire a digitiser.

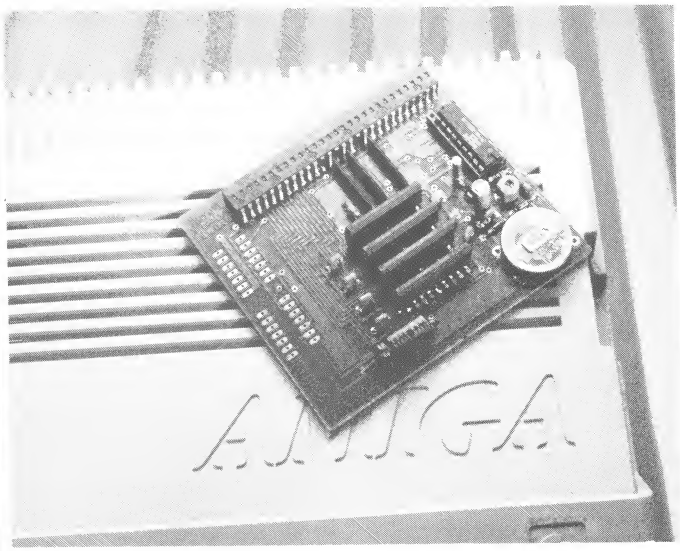
Nigel Mitchel, Sittingbourne, Kent.

● New peripherals for the tired old 64 are a bit thin on the ground, so the best course of action is to place an ad. in the Express classifieds (form at the back of every issue).

HELP!
Amiga expansion

Congratulations on such a great magazine. I have recently bought a Commodore Amiga A500 with 1084 monitor. I wish to upgrade my Amiga to 1 megabyte of RAM. Some advertisements state the A501 expansion and others just memory expansion all at different prices. What are the differences between them and which do you think I should buy?

P. R. Burridge, Wheatley, Oxon.



● A typical RAM expansion for the Commodore Amiga.

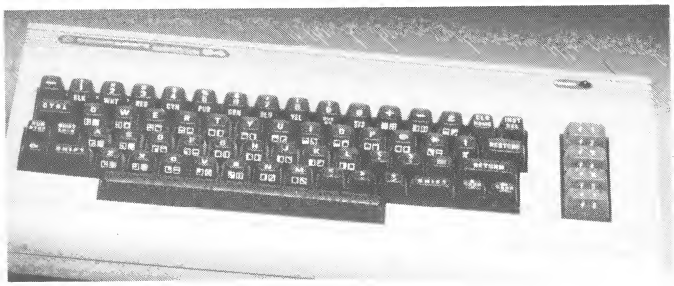
● By now, you've read the Express guide to RAM upgrades *(ish 25)* and know all about it. Some of the expansions on sale are compatible with Commodore's own A501 expansion card – others, as you say, are not. If the expansion of your choice isn't compatible then there may be a *tiny* risk with some software not being able to see the extra memory. Take a look at my choices for the Amiga and pick one of those – you won't be disappointed.

HELP!
C64 digitiser

I am interested in buying a video digitiser for my Commodore 64. For the five months I have had my tables etc. I also have an Amiga and I have heard some samples which it can reproduce and I would like to combine the two hobbies. So please could you tell me the best sampler there is and also software which can play four samples at once of possible. Also, where can I get leads to connect the computer's audio output to my mixer. I would be very grateful for any help you can give

Matthew Wakley, Seaton, Devon.

● Call Datel Electronics on 0782 744707. They have all the hard and software you need to sample and play back music.



● Choosing a video digitiser for the Commodore 64

TIP
Help on hand

We can help your reader Derek Byrne and others like him who are searching for serious PD software for their C64, 128, Plus4 or even the PET. The Independent Commodore Products User Group has a huge software library which is free to members. Our service to Amiga users is well known and we have the latest Fish disks up to 194.

Our members send a blank disk to the appropriate librarian who will send in return a catalogue disk from which to make a selection.

For details of membership write to Jack Cohen, 30 Brancaster Rd, Newbury Park, Ilford, Essex IG2 7EP.

John Bickerstaff (Chairman) Croydon.

HELP!
Aladin's lamp

I am a student and would like to upgrade from a PCW to an ST or Amiga. The only problem is that I have lots of Macintosh software and can't afford a Mac – who can! I also want something that plays games well. I am aware of the Aladin emulator for the ST which sounds excellent. There have been short mentions of a Mac emulator for the Amiga in certain other publications but all they say is that it is available in America. Why can't it be bought over here? I have contacted loads of dealers but nobody knows anything about it. Please, please could you give me some details as I can then chose between the two systems (hard disks are essential).

Michael Stephenson, Port of Erin, Isle of Man.

● You have lots of Mac software but no machine? May I ask where you obtained the software? Am I to assume that you have access to someone else's Mac and have made copies of the software? Uncle Techtip is crusading for a world free of software pirates brothers and sisters, Hallelujah!

Don't copy software Mike, it isn't nice. The new Amiga Mac emulator is excellent. It can read Mac disks directly but for you, the device is next to useless as it can't access hard disks. You should choose the ST and buy acopy of Spectre 128 the new Mac emulator from Hisoft (call them on 0525 718181). The Spectre offers a 30% larger screen, 20% increase in speed and can access hard drives faster than a Mac – it also uses the new 128K Apple ROMS which you can buy from Hisoft with the device.

TIP
Seen and heard

I have just read the 15th April issue of Express. Your main article on which micro to buy explained about the beep sound of the PC. I have news – there is a sound board available for the PC! It is made by the Innovation Computer Corporation in the USA.

The Innovation SSI-2001 sound board is a half-height, plug-in expansion card that will fit any IBM compatible computer. The card has a 15 pin game port for joysticks and an RCA jack for headphones or an external amplifier. Three voices of synthesised sound. At present software is being developed by Spectrum Holobyte and Microprose. By summer, there should be 12 or more games supporting the card. Cost of the board is $129 and Innovation are happy to ship units to this country. The company's address is Innovation Computer Corporation, Innovation Building, 1325-1327 Juniper Street, Cleveland, WI 53015 USA.

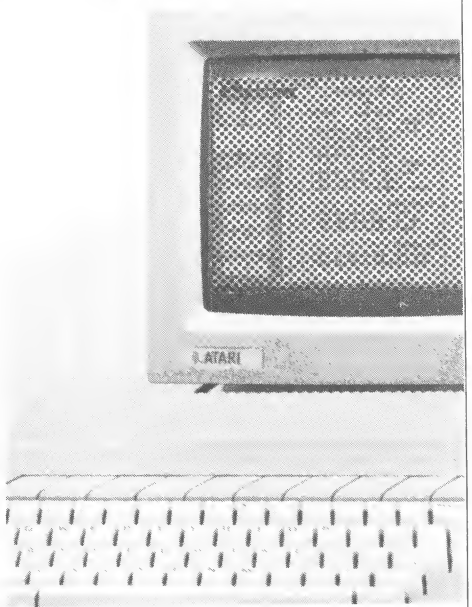
John Crawford, Tiverton, Devon.

TIP
Oh Brother!

Regarding your reply to Keith Spence about connecting a serial printer to the ST, having had trouble connecting a Brother EP22 to the ST, the following may help. There is a problem with the serial problem of the ST. The book Atari ST Internals states that the CTS pin is non-standard and prevents serial printers working. However, in a document file on the 1st Word disk, the following connections are given and they certainly work with the EP22.

With a 25-way standard connector make the following connections. ST pin 1 (PROTECT) to printer pin 1, ST pin 2 (TX) to printer pin 3, ST pin 5 (HANDSHAKE) to printer pin 20 and finally, ST pin 7 (SIGNAL GND) to printer pin 7. I hope this will be of use.

Ian Ferguson, Lowry Hill, Carlise.



● Serial connections and the Atari ST

HELP!
Mini changes

Can you or your readers help? I recently bought a budget copy of MiniOffice (released by Summit Software) as a first foray into the world of databases, word processors and spreadsheets.

I have transferred them to disk and changed the device number to save files to disk but being a dum-dum as far as programming goes I would appreciate some help to change the save routines in the database and spreadsheet programs to include a save/replace feature.
R. C. Whinnerah, Letchworth, Herts.

● The Reverend Techtip replies: There is a little known parable (in the stop press at the back of the book) concerning the four dum-dums. Three of them used their software diligently and remained true to the word of the licence, but the fourth – decided to break copy protection and corrupt the poor software for his own purposes. One night this fourth person experienced a visitation from the forces of the great spirit FAST and was never seen or heard of again – here endeth the first lesson.

You didn't even tell Uncle Techtip which machine the software is running on, so how can I help.

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TIP
Never ending story

I own an Amstrad PC1640 with a mono monitor. I think that some of your readers might be interested to know how I went about converting it for use with a colour monitor. I purchased a second-hand Taxan 760 colour monitor in the first place but I had to use the mono monitor for the power supply.

I traced a suitable power supply to Display Electronics of 32 Biggin Way, Upper Norwood, London. The type is a 13090 made by Boshert. This power supply is of open construction so it will require a suitable case with due regard to the mains voltage involved. The 14 pin DIN plug for the power supply is available, complete with cable, from Genuine, 27 Ramford Street, St. Helens, Merseyside price £7.95 + £1.00 VAT.

I have been using this set-up for about two months without problems.
T. J. Hancox, Patchway, Bristol.

● Changing the mono monitor of the PC1640 for colour .

HELP!
Better BASIC

Did you know that the graphics commands in GW BASIC supplied with the 2086 will not function properly on the high resolution monitor. Something to do with GW BASIC not being programmed for the pixel size of the screen. Can you tell me

1. Is there a command or program to enable GW BASIC graphics to be used with colour on the monitor described above?

2. If 1. then is there a manual for programming GW BASIC?

3. If not 1. is there any BASIC language program in existence which will work to full capacity with the above configuration?

I. Butterworth, Royton, Oldham.

1. No.

2. There is a quantity of BASIC programming texts the size of a small planet. Visit any branch of Waterstones. With a little application and a pocket full of moolah you'll find something.

3. Call HiSoft on 0525 718181. HiSoft is one of the best language suppliers in the UK (I'm angling for freebies, right? – Tech Ed) and will be able to furnish you with a replacement for the dreadful GW BASIC.

HELP!
Dreaded infection

I was wondering if you could give me some advice about Amiga viruses? I recently borrowed a public domain disk in (...edited here. Yes, it's the old story – Tech Ed).
K. A. Grant, Reading, Berks.

● Read the Express feature all about viruses and what to do if they infect your machine (Express issue 19) available from Express back issues, The Old Barn, Somerton, Somerset TA11 7PY, for the amazingly cheap price of 75p including post and packing. I just don't know how we do it, I really don't. I was just saying to Madge in the High street the other day...

HELP!
Composite Commodore

I have just bought a Philips CM 8833 colour monitor. For the time being, I use it with a C64 on the composite video input, but I'm wondering if my C64 has an RGB output? If it does, can you please tell me how to connect it to my C64?
Gerald Corny, Palmers Green, London.

● Prepare yourself for a shock G. C. – it doesn't! Carry on using the composite output and all will be peace and tranquility. Our very own Rik 'Hitman' Haynes who – by his own admission – has a very strange set-up, uses the CM8833 monitor with composite input and experiences no problems – at least, not problems associated with computing...

HELP!
New serial

Can you help me please? I drive a Seikosha GP100A (this isn't a motoring mag – Tech Ed) printer (I stand corrected) from my Spectrum +2 using a Tasword +2 package. I cannot get the graph commands to work. I have tried the program in this week's Techtips re. self drive printing, but I can only get ordinary text. Do you know any tricks for this (I have nothing up my sleeves and absolutely nothing between my ears – Tech Ed. Hang on, that's not right...) either with Tasword or LPRINT?

Also, can you assist with a suppliers name. I wish to get a disk drive (with an interface) for the +2.

● Anyone with information re. the first problem can call Uncle Techtip and I'll pass on the glad tidings. As for your second query, call MGT on 0792 791100 who market a range of drives for the Spectrum.

TIP
Shareware word pro

Re. your article *keynotes* (ish. 23). Uedit V2.3 by Rick Stiles, a word processor in the public domain (shareware) uses *shift*, *control*, *alt*, *left amiga*, *right amiga*, *backspace*, *cursor keys*, keypad and the function keys to perform many functions as well as optional mouse clicks. The program is from the Pacific North West Amiga User Group and is available from Softville PD (call them on 0705 266509 – Tech Ed).
J. P. Banner, Rotherham, South Yorkshire.

HELP!
Needmore leads

I recently bought an Amiga and have tried connecting it to my Amstrad CPC464 colour monitor without much success. Can you tell me how to wire up the lead, or who can supply such a lead?
G. J. Rees, Chelmsford, Essex.

● Call Meedmore Ltd on 051 521 2202 who supply 500 leads for all makes and configurations.

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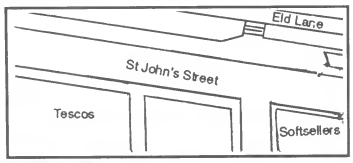

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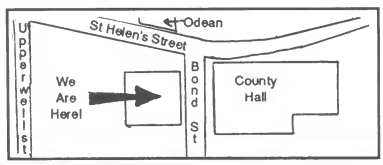

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ATARI ST, ART director, DGCALC, £19 each. CPT. blood, Outrun, Test Drive, £8 originals, Roger Poppleton, 8 Waldemar Avenue, Fulham SW6

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FOR SALE Commodore 64 games, tape only, from only £1, all originals. Telephone 091 263 4866.

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WANTED ATARI ST! No software, but in good working order. Must be cheap. Phone 0726 72323 8am - 4.30pm, ask for Tony.

C64 SECOND HAND bargain tape games for sale. Send SAE for list. Roddy Mackenzie, 14 Lynedoch Road, Methven, Perthshire PH1 3PH.

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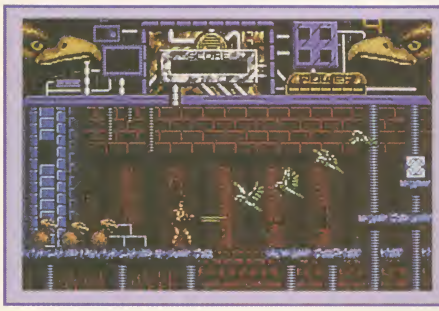
Eye to Eye

Rik Haynes takes a look at the latest release being hawked by Thalamus



HAWKEYE • THALAMUS

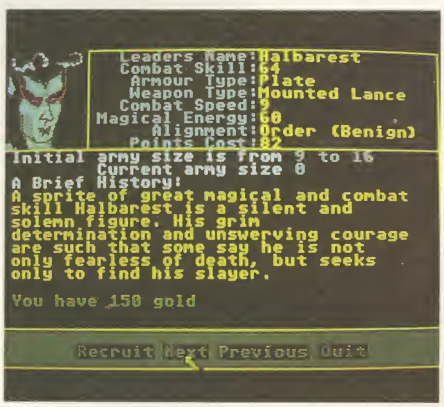
Considering the success of *Hawkeye* on the C64 last year, it comes as little surprise that Thalamoose should choose this platform game as its first foray into 16-bit territory. Currently under development on ST and Amiga, *Hawkeye* features 12 horizontally-parallax-scrolling levels. Originally programmed by Dutch team, Boy Without Brains, *Hawkeye* is being converted to 16-bit format by Esprit Software, and is due for release later this month.

ALTERED BEAST • ACTIVISION

Continuing its commitment to convert the latest coin-ops over to Spectrum, C64, CPC, ST and Amiga, Activision is due to launch Sega's scrolling martial arts hack'n'slash-'em-up, *Altered Beast*. Other Sega coin-ops on their way to micro-format – via Activision – include *Power Drift*, *Galaxy Force* and *Super Wonderboy*. Let's hope they're more playable than the last Activision/Sega over-hyped coin-op Christmas biggie, *After Burner*.

LEGEND • ACTUAL SCREENSHOTS/CRL

Playing either a king or a queen, Legend allows you to partake in a spot of empire building as you take on all comers in this role-playing adventure. During play you can cast spells, make or break armies and dispatch all manner of evil or good, depending on what sort of leader you wish to be. Available soon on ST, with an Amiga version due out in June.


Leaders Name:Halbarest
Combat Skill:64
Armour Type:Plate
Weapon Type:Mounted Lance
Combat Speed:9
Magical Energy:60
Alignment:Order (Benign)
Points Cost:82
Initial army size is from 9 to 16
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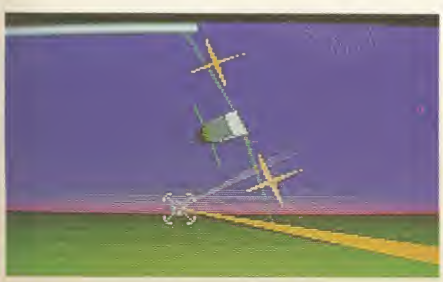
A Brief History!
A sprite of great magical and combat skill Halbarest is a silent and solemn figure. His grim determination and unswerving courage are such that some say he is not only fearless of death, but seeks only to find his slayer.
You have 150 gold
Recruit Next Previous Quit

TAIL GUNNER • ACTUAL SCREENSHOTS/CRL

Due for release on the Amiga in July, with an ST version following in August – *Tailgunner* recreates the dangerous but crucial job of a tailgunner in a World War II bomber. Blowing away the bogey at one o'clock while keeping an eye out for another member of the enemy flight formation – you'll have to be on the ball to stay one step ahead in this shoot'em-up.



TANGLED TALES • ORIGIN/MICROPROSE

From the software company that brought us the *Ultima* series of role-playing adventures, comes *Tangled Tales "The Misadventures of a Wizard's Apprentice"*. Reportedly offering a more light hearted approach to the role-playing genre, *TT* is a blend of menu and icon interfaces, with you set in the role of a wizard's apprentice, undergoing three tasks to prove your worth. Out soon on C64 and PC.

FUTURE SPORT • ACTUAL SCREENSHOTS/CRL

Future Sport is a multi-directional scrolling shoot'em-up recreating the sport of the 21st century – street violence transferred to the stadium. What with its Practical *Virus Killer* and a string of new releases, CRL looks set to make more of an impression on the software market this year. *Future Sport* is out later this month on ST, with an Amiga version to follow shortly afterwards.

BATTLE CHESS • ELECTRONIC ARTS

After its debut on the Amiga, and even an outing on the trusty old PC, *Battle Chess* is due to make an appearance on the ST next month. Featuring an admirable blend of classic gameplay and 4 Megs of animation graphics and sampled sound, *Battle Chess* is the most attractive micro implementation of chess we've ever seen – we wonder when its out on the ZX81?

FIRE KING • STRATEGIC STUDIES GROUP/ELECTRONIC ARTS

Available on C64 disk in early Summer, Fire King is a fantasy arcade/adventure role-playing featuring an overhead scrolling view of the action. Taking on the quest to throw some light on the death of the great Fire King, you'll meet all sorts of monstrous scum like Vampire bats, while constantly on the look-out for the mysterious and deadly Death Beasts.

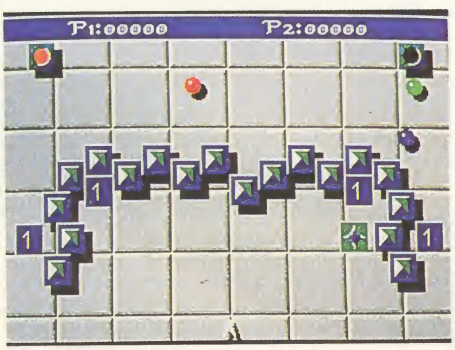
● Real variety in software origination this week, with the latest from Germany, USA and UK.

Fielding drove a steering wheel to steering wheel road test with *The Duel* and *Lombard RAC Rally*, but afterwards decided to stick to his trusty old Sinclair C5. *International Karate* kicked off ok on the PC – albeit with a crummy CGA display – and German-sourced *Tom & Jerry* and *Beam* recieved only indifferent reviews. But the game that outshone the rest was *Total Eclipse II* – another great example of UK programming skill.

BEAM

MAGIC BYTES

£ TBA
Other versions TBA



● A beaming release...

Nothing esoteric here. Just a plain ol' computer game depending on addictive qualities rather than any fancy notions of gameplay or graphics.

● GAMEPLAY

You are a cursor under inertia which Beam clearly couldn't be bothered turning into anything faintly resembling a ship.

Fire button will put the skids on as the ship attempts to avoid nasty bouncing balls. All that needs to be done is knock out a load of bricks and link up fire banks with laser beams.

If you're really dumb you'll cross your on beams – end of chat. All your efforts will be rewarded with a trip to another screen in much the same way as Arkanoid.

Indeed, the whole affair is best described as Breakout with lots of horrid baddies and you in total control of the ball.

● SOUND AND GRAPHICS

Dreadful Euro Pop electric screechings make up the title sound track – sane people will almost certainly prefer silence. Sound effects are minimal and fade into the subconscious – as the darned things should.

On the graphics front Beam looks presentable and doesn't pretend to be anything else. Magic Bytes has wisely decided not to faff around with sprites and the like which, in this case, can only get in the way.

● EXPRESS VERDICT

A higgeldy piggeldy mish mash of lots and lots of game concepts going back to the earlies days of Pong. Some clever sod somewhere had the bright idea of chucking the lot together and offering Amiga owners a simple little affair with no pretensions. It looks like a decidedly dodgy affair at first sight. But soon emerges as, in the blandest possible terms, a nice game.

★★★

John Mc Cleary

TOTAL ECLIPSE II

INCENTIVE

CPC £11.20cs (includes Total Eclipse I)
Available from Home Computer Club (01 637 0341)
also out on Spectrum, C64.

Driller, Dark Side and Total Eclipse owe their success to the Freescape system developed on the CPC and their immensely involving gameplay. Total Eclipse II - The Sphinx Jinx - continues the mix, though here you only have one hour to complete the brief.

● GAMEPLAY

Your mission is to rebuild a Sphinx from 12 parts hidden around the underground system of tunnels and caverns of an Egyptian pyramid. You have a revolver, wrist watch, water bottle and compass to help you manouevre your way through the subterranean maze and negotiate levitating floors, shrinking rooms, invisible walls, disappearing stairways and mirages. Like its predecessor, you encounter undiscovered chambers and barriers along the route only accessible if you're in possession of Ankhs - Egyptian symbols of Life. But the deviousness of design makes Eclipse II much much harder. For a start there's less water to replenish you and you can't rest as much since you only have an hour to complete the task. As such the load/save feature is essential plus you'll need to make a map because we're talking serious puzzlement cut with plenty of fiendish traps. Although it will obviously help, you don't need to have played the prequel to succeed in the sequel.

5 GAME

● GRAPHICS AND SOUND

Freescape graphics convey a convincing impression of endless solid constructions. The main screen is devoted to a viewing window surrounded by various indicators of your current state of health, progress and orientation. At any point you can move up, down, forward, back, left, and right so you can easily lose all sense of direction. There's also the usual skilful use of shading to convince you there's a lot more than just four colours up and running. Sound is confined to beeps and spot-effects but still maintains the great sense of atmosphere.

● OTHER VERSIONS

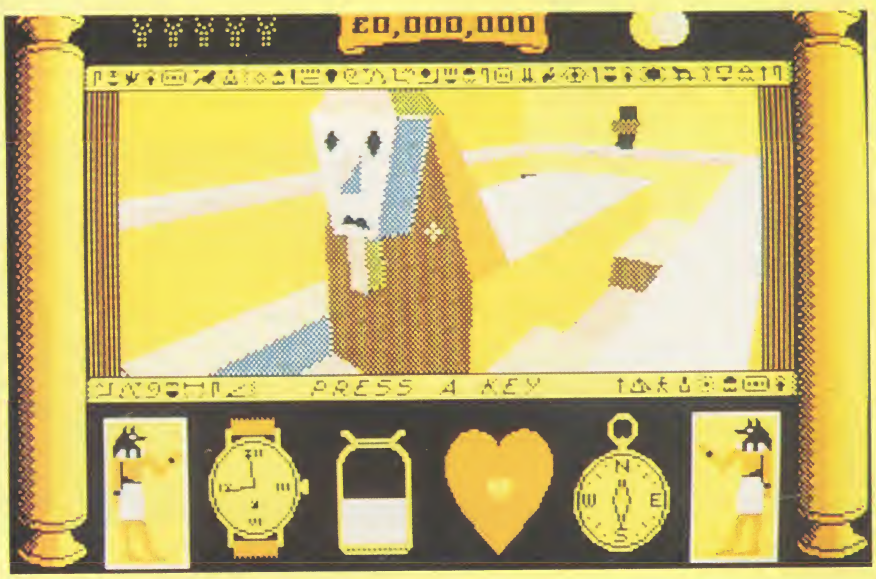
Total Eclipse II is as yet unseen on the Speccy and C64. ST and Amiga versions will follow. Both Total Eclipse I and II are available together for £11.20.

● EXPRESS VERDICT

Another winner from Incentive in terms of convincing atmosphere, technical accomplishment and graphic excellence. Although Freescape's screen updates aren't anywhere near fast enough to support frame animation, they're still quick enough to deliver the sheer involvement essential to any game. And in this game the difficulty factor is cranked up so high it'll take you hours before you finish it in a hour!

★★★★★

Andy Storer



● Play like an Egyptian?

INTERNATIONAL KARATE

System 3

IPC £24.95
Also on C64. ST

Already highly regarded by C64 martial arts gameplayers, International Karate has just hit the PC screens in CGA only, perhaps the worst graphics mode this side of a PCW...

● GAMEPLAY

International Karate is a kick-em-to-death-em-up played against a series of stylised backdrops from around the world, ranging from Sydney, Australia to New York, USA.

Playing against the computer or a human opponent, you control a nimble karateka with 16 possible manoeuvres under your (black?) belt – including a front lunge punch, flying kick, back crouch punch and an infamous roundhouse – with just one aim in mind, knocking out your opponent.

● GRAPHICS AND SOUND

CGA graphics fail to enliven or inspire, although the sprites and backdrops are accurate representations of their C64 parent. The only remarkable aspect of the visuals is the terrific speed at which the sprites move and animate around the screen.

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● Kicking ass down under

Audio is even worse – as you could probably guess – with a totally irritating version of the oriental soundtrack and puerile sound spot-effects.

● OTHER VERSIONS

A timeless classic on the C64, IK scored highly in both audio and visual departments, thanks to the talents of programmer Archer Maclean and musician Rob Hubbard.

ST IK hits the mark as well, with picturesque backdrops and really cute sprites – in fact, it was one of the first games to successfully show off the ST graphics capabilities.

● EXPRESS VERDICT

PC IK is a fast'n'furious game which provides a dimension of urgency not usually found in a PC release. This is unfortunately negated by the appalling CGA graphics, which leave you with the unwholesome feeling of being badly let down somewhere along the line.

International Karate is still worth a look, though – especially if System 3 do an EGA version.

✪✪✪

Rik Haynes

TOM & JERRY

MAGIC BYTES

Amiga £ TBA
Other versions TBA

After its lacklustre attempt at producing a computer game based around The Pink Panther last year, German software house Magic Bytes now has Tom & Jerry targeted for computeration.

● GAMEPLAY

Horizontally-scrolling platform action again folks, but this time its not even interesting enough to inform you of any relevant gameplay info.

● GRAPHICS AND SOUND

Cliched backdrops, ineffectual sprites and revoltingly slow speed make Tom & Jerry look and sound more like a license of a technical manual rather than a fast paced, classic cartoon series. The Tom & Jerry sprites are recognisable but certainly not outstanding and the monotonous soundtrack sounds like it comes from an appalling "Oh no, what will the Vicar say?" TV sitcom title tune.

● OTHER VERSIONS

No details at present.

● EXPRESS VERDICT

The fact that this game is just an inadequate attempt could be forgiven if it wasn't such a total misuse of a great opportunity.

Imagine what this license could have incorporated – snippets of the cartoon series could have been used, animation and sound-effect sequences could have been formed from the cartoon's huge repertoire, and the best of the set pieces could have been used for stage scenarios. But not in this release, what you get is a standard platform affair, written to strict formula – not even uplifted by decent audio-visuals.

Tom & Jerry, the computer game is a waste of time. You're better off sticking to the excellent cartoons.

✪

Rik Haynes

● By the way, you control Jerry

Road Test ✪ Road Test ✪ Road Test

THE DUEL/ TEST DRIVE II

Accolade Software

PC £24.95
Also on C64, Amiga

Sick with envy when a Porsche 959 forces your moped into the gutter? Maybe your salary at the dog-food factory won't stretch to the rich oik's favourite form of transport, but you can have the next best thing in the form of The Duel from Accolade.

● GAMEPLAY.

After choosing either a Ferrari F40 or a Porsche 959 as your street-cred conveyance, you find yourself at the wheel of the chosen beast on a typical-looking American highway just waiting to take off.

You can race against the computer or the clock so after moving smoothly thru, sorry through, the gears you will either worry about the time, or the white computer car up your ass.

The game involves you racing across the States, avoiding the cops, remembering to gas up, avoiding juggernauts whilst overtaking other vehicles and generally experiencing the thrill and exhilaration of racing a fast car against crazed silicon opponents. That's the idea, anyway.

● Not even worth a provisional license

● GRAPHICS AND SOUND

The game is opened with a tune reminiscent of the Peruvian nasal flute being played by a drunk with a runny nose. The rest of the game's sounds are buzzings, squeaks and squawks that will have you reaching for the volume control or the sick bag.

Graphics are progressive and the whole concept is innovative. Unfortunately, owing to the limitations of the PC, the display is crap – what more can I say? Slow and blocky with dreadful colours and indistinguishable landscape features.

● OTHER VERSIONS

Also out on the C64, Amiga. Spectrum, CPC and ST versions under development

● EXPRESS VERDICT

A good idea poorly implemented. The car is difficult to control and the display is difficult to decipher – save up your gelt and buy yourself a driving lesson.

✪

Fielding 'Stirling' Mellish.

● Less exciting than Top Gear? Impossible!

LOMBARD RAC RALLY

Mandarin Software

PC £24.95
Also on ST, Amiga

Transfer your desires to burn up the streets in a rodded Cortina MKII to the relative safety of your micro by zooming around in Mandarin's RAC rally sim

● VERSION UPDATE

After getting through the opening 'setting-up' screen in which you can choose to give a TV interview and select the leg of the rally you wish to execute, you find yourself seated at the wheel of a Ford Sierra Cosworth at the start of the race. A chequered flag drops before you then it's hard forward on the joystick, sorry, accelerator and in a flurry of mud, you're off.

The point of the race is to complete your chosen section in a time sufficiently small to entitle you to the dosh – to do this, you must drive at top speed along a screen display resembling a scrolling zebra crossing. At each side of this there are barrels, trees etc., which you must avoid. If you do happen to hit one of the obstacles, you will see pieces of the car fly into the air before you.

● GRAPHICS AND SOUND

The interior of the car is well drawn with lots of instruments and a navigator holding a map. A real-time clock is on the dashboard and the driver (you) changes gear and turns the wheel quite smoothly. The scenery outside the car is poor – a sweeping panorama of either green or brown and a zebra crossing to drive along.

Sound is dreadful but then this is PC game, whaddaya expect? That bluebottle at the windscreen is supposed to be your engine in full flight.

● OTHER VERSIONS

Also available for the ST and the Amiga.

● EXPRESS VERDICT

Beats the hell out of driving rodded Moggy Minors, but as for true racing simulation there's about as much excitement in an episode of Top Gear.

Car crash!

✪✪

Fielding 'Grand Prix' Mellish

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In the twighlight domain

Dave Langford makes contact with software from the dead

You probably have a few pieces of ghost software lurking on your disks. These undead programs linger on with a strange and ghastly semblance of life; they flit and moan and haunt the conscience of their murderers. Or at least, they would be if big software entrepreneurs *had* consciences.

Well, I exaggerate, as usual. Ghost software is perfectly lively stuff, however much its erstwhile makers insist that it's dead. A good example is WordPerfect 4.2 as configured for the old Apricot computers. (As distinct from Apricot's current IBM clones; the 'real' Apricots were nice machines and ahead of their time, so were of course junked for being better than the then IBM 'standard'.)

There are plenty of Apricots around, elderly and slowish by 1989 expectations, but still hale and hearty. The best word processor ever issued for them was surely WordPerfect 4.2. But you can't buy the Apricot version any more. Indeed you would often be discouraged from buying it back then: the program had a bug on some models, and the UK importers would tell enquirers, incorrectly, 'No way will it ever run on an Apricot F series machine!'

(My own outfit had whipped up a memory-resident cure for the bug. In gratitude, a certain company which shall be nameless threatened us with a lawsuit because, when marketing this and other WordPerfect utilities, we wickedly mentioned the name WordPerfect. With grim determination to avoid making sales they also continued to tell enquirers that no way would WordPerfect ever run... etc. But I digress.)

WordPerfect Corporation offered a solid reason for pulling the plug on this particular version. The program might exist, and likewise the manuals (you only got the IBM manual with a couple of Apricot-specific bits of cardboard) but they couldn't cope with support. It wasn't economic. Once again my own dynamic company leapt into action! 'No trouble, squire. Just give permission to buy IBM WordPerfects at trade price, substitute copies of our master Apricot disks, and take over all responsibility for support.' WordPerfect Corp. found it uneconomic to reply.

So, along with many another package, that WordPerfect version is ghost software... in the twighlight domain. Although we all know that making pirate copies is as wicked as genocide or parking on double yellow lines, it's hard to condemn anyone who resorts to a naughtily acquired program when it's one which the manufacturers and their dealers refuse point-blank to sell you. One day it'll be a lovely test case in some court. 'I desperately needed the program, I tried for months to buy it, but the makers refused and left me no alternative.'

Har har, you think, this only affects unlucky users of machines which like the Apricot have fallen by the wayside. Actually it's a wider problem, because manufacturers are always positive that their newest program version is best for you, and with the firmness of an Edwina Currie will try their damnedest to lumber you with this hyper-enhanced version containing 850% of the features you actually want.

Consider, for example, WordPerfect 5.0. As a writer I've been using 4.2 for some while, and know hordes of other devotees. IBM 4.2 has one serious bug (if you write plays or TV scripts with it using the 'parallel columns' feature, beware of giving anyone a speech longer than one full-page column) and some little roughnesses. But it's got a nice clean screen without poxy windows everywhere, is straightforward to use, and boasts all the features writers need.

When you try version 5.0, the added knobs, bells and whistles really begin to get in the way should you just want to, you know, write. The huge bloated program needs a disk change to load from 360K floppies. Format options invariably take more keystrokes than in 4.2 Affordable printers take second place to expensive laser gadgetry in the set-up menus (and if you want to configure an offbeat printer... forget it, the program for doing so isn't documented! They want a disgraceful extra twenty quid for that manual). The UK importers wittily summed it up by issuing helpful 'tech tips' describing in two columns of small print the endless keystrokes required for that most arcane of tasks – setting up WP 5.0 for A4 paper.

As a writer pal said, 'What WordPerfect thought was, we've got a good bicycle here and everyone agrees it's a good bicycle. So what we'll do is, we'll put thirteen more wheels on it."

Meanwhile, one can feel the IBM WordPerfect 4.2 drifting towards the twighlight domain. There's an ominous silence about whether it'll be supported or available after 1989. Maybe the users' enthusiasm will keep it alive or bring it back, as with Classic Coke...

More and more, big manufacturers want to sell huge batches of expensive programs to other big firms who've already been conned into buying PC networks forty times as powerful as actually required. More and more, they produce overmuscled software requiring 2Mb of added memory, a 385Mb hard disk, an ultra-high resolution screen, a nest of mice and a bar-code reader before you can word-process so much as a postcard. And the earlier program versions, the ones that ordinary people like us can run, fades slowly into that twighlight state which to some looks temptingly like the public domain.

Personally I'm not half as worried about this as the big software houses ought to be.

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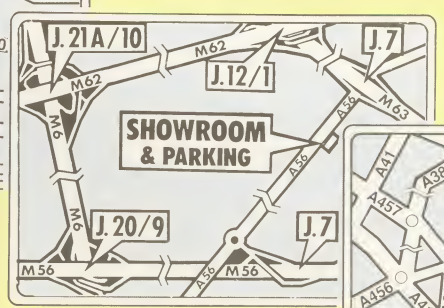

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